“A SIMPLE CLINICAL SCORING SYSTEM ‘TOPRS’ TO PREDICT THE OUTCOME AND MORTALILTY IN PAEDIATRIC EMERGENCY DEPARTMENT IN TVMCH”

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CHENNAI ,

TAMIL NADU.

CERTIFICATE

This dissertation entitled **"A SIMPLE CLINICAL SCORING SYSTEM 'TOPRS' TO PREDICT THE OUTCOME AND MORTALILTY IN PAEDIATRIC EMERGENCY DEPARTMENT IN TVMCH**" is submitted to the **Tamil Nadu Dr. MG.R. Medical University,** Chennai, in partial fulfilment of regulations for the award of **M.D. Degree in Paediatrics** in the Examinations to be held during April 2015.

This dissertation is a record of fresh work done by the candidate DR**. T.ARTHILATHA,** during the course of the study (2013-2015).

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PROTOCOL TITLE: Simple scoring system "Toprss" for triage and to predict outcome in paediatric emergency department in TVMCH

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Dear Dr. T.Arthilatha, *The Tirunelveli Medical College Institutional Ethics Committee (TIREC) reviewed and discussed your application during the IEC meeting held on 28.12.13.*

THE FOLLOWING DOCUMENTS WERE REVIEWED AND APPROVED

1.	TIREC Application Form	☑
2.	Study Protocol	☑
3.	Department Research Committee Approval	☑
4.	Patient Information Document and Consent Form in English and Vernacular Language	☑
5.	Investigator's Brochure	☐
6.	Proposed Methods for Patient Accrual Proposed	☑
7.	Curriculum Vitae of the Principal Investigator	☑
8.	Insurance /Compensation Policy	☑
9.	Investigator's Agreement with Sponsor	☐
10.	Investigator's Undertaking	☑
11.	DCGI/DGFT approval	☐
12.	Clinical Trial Agreement (CTA)	☐
13.	Memorandum of Understanding (MOU)/Material Transfer Agreement (MTA)	☑
14.	Clinical Trials Registry-India (CTRI) Registration	☐

THE PROTOCOL IS APPROVED IN ITS PRESENTED FORM ON THE FOLLOWING CONDITIONS

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2. The date of commencement of study should be informed
3. A written request should be submitted 3weeks before for renewal / extension of the validity
4. An annual status report should be submitted.
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6. At the time of PI's retirement/leaving the institute, the study responsibility should be transferred to a person cleared by HOD
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    c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented.
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INTRODUCTION

Paediatric Critical care has been well developed in the past few decades. Newer innovation, technology, Drugs, and Treatment has changed the entire clinical scenario. The mortality has been considerable reduces in the last three decades especially in the developed country and the gap is reduce between developed and developing countries.

In developing world much time is wasted due to lack of knowledge in identifying critically ill child, late referral. Mortality in critically ill child is more in first 24hours timely intervention and golden hour management can bring about changes in reduction of mortality

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CONTENTS

S.No	TITLES	Page No
1.	Introduction	1
2.	Review of literature	7
3.	Epidemiology	12
4.	Study justification	14
5.	Objective	15
6.	Methodology	16
7.	Manoevers	17
8.	Analysis and observation	19
9.	Discussion	103
10.	Conclusion	105
11.	ANNEXURE	
12.	PROFORMA	
13.	BIBLIOGRAPHY	
14.	MASTER CHART	

ABBREVIATION

APLS	-	Advance paediatric life support
AVPU	-	Alert, voice responsive pain, responsive, unresponsive
ED	-	Emergency department
FIO_2	-	Fraction of inspired oxygen
HR	-	Heart rate
ICMR	-	Indian council for medical research
IMR	-	Infant mortality rate
MDG	-	Millennium development goal
NMR	-	Neonatal mortality rate
PaO_2	-	Partial pressure of oxygen
PALS	-	Paediatric advance life support
RR	-	Respiratory rate
SaO_2		Saturation of oxygen
SICK	-	Systemic inflammatory that can kill
SIRS	-	Systemic inflammatory response syndrome
Temp	-	Temperature
TOPRS	-	Temperature oxygen saturation pulse rate respiratory rate seizure and sensorium

ABSTRACT

A SIMPLE CLINICAL SCORING SYSTEM " TOPRS" TO PREDICT OUTCOME AND MORTALITY IN PAEDIATRIC EMERGENCY DEPARTMENT IN TVMCH

AIM AND OBJECTIVE OF THE STUDY

To develop a simple clinical scoring system to predict the severity of the illness and to triage, prioritise care and predict outcome of paediatric patients who are attending emergency department in TVMCH.

To validate the usefulness of TOPRS clinical scoring system in predicting mortality at the time of admission in a Government tertiary care Hospital in Tirunelveli. To identify the factors contributing to mortality.

METHODOLOGY

It is a prospective hospital based observational study done by

Enrolling 300 children over a period of six months. All patients admitted in I, II, III unit and IMCU and PICU was forming study population. Children below the age of One Months, Patients leaving the hospital against medical advice, patient admitted in surgical side, brought dead were excluded from study. Data collected are age, sex, provisional diagnosis, Temperature, oxygen saturation, pulse rate, respiratory rate, sensorium, seizures were noted on the predesigned proforma at the time of admission. Variables categorised as NORMAL

(SCORE-0), ABNORMAL(SCORE-1) based on systemic inflammatory response syndrome criteria and criteria mentioned in APLS,and the total score was computed for each child.

Hospital discharge status (death / discharge) was the primary outcome variable.

ANALYSIS AND OBSERVATION

Out of 300 children enrolled in the study 274 was discharged and 26 died. The clinical picture was studied in relation to age, sex and mortality. Mortality significantly increased with decrease in age and outcome has no sex prediliction, mortality is equal in both the sexes.

The TOPRS score was studied in relationship to study population and its relation to mortality. The minimum score is 0 and maximum score is 6, clustering of cases seen in 0 and 1 score. There was no death in 0 score, mortality increases with increase in abnormal variables, children with >3 variables had 100 times mortality risk than children with <3 abnormal variables the linear trend of increase in mortality with increase in score was significant.

Each variables and their association with mortality was analysed with univariate analysis. It was found that HR,RR,$SPO_{2,}$and Sensorium has strong association with mortality. The magnitude of the association was further analysed by Logistic regression and found out that variables like SPO_2 and HR are strongly associate d with mortality with a P value highly significant at

1%,variables like RR and Sensorium are strongly associate d with mortality with a P value highly significant at 5%.

Further the predictive ability of our scoring system was analysed using ROC curve, the area under the curve is0.92.(the score based on regression could predict the mortality in 92% subjects correctly). Further a score of 2 showed maximum discrimination with sensitivity of 87% and specificity of 97%.The TOPRS Score is considered excellent at predicting mortality based on the area under the curve.

CONCLUSION

From the above results and discussion the following conclusions are arrived

- TOPRS is simple clinically developed scoring system base vital signs alone which will be useful in predicting the severity of illness and mortality at admission itself in ED.
- TOPRS score provides an objective assessment of severity of illness
- Score perform extremely well in predicting mortality in a tertiary care centre.
- TOPRS score being a clinical scoring system which does not require any expertise can applied at all levels of health care to prioritise and identify critically ill patient who would benefit from prompt referral to a higher centre especially in regions of resource poor environment

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Shann .E.PearsonG.SlaterA.,Wilkinson K . Pediatrics index of mortality[PIM]; A mortality prediction model for children in intensive care.Intensive care med.1997;23[2];201-7.

Key Words: Outcome Assessment; Triage; Emergency department; Pediatrics,TOPRS,

INTRODUCTION

Paediatric critical care has been well developed in the past few decades. Newer innovation, technology, drugs, and treatment has changed the entire clinical scenario. The mortality has been considerable reduced in the last three decades especially in the developed country and also the gap is reduced between developed and developing countries.

In developing world much time is wasted due to lack of knowledge in identifying critically ill child and in late referral. Mortality in critically ill child is more in first 24hours, timely intervention and golden hour management can bring about changes in reduction of mortality rate. To achieve this proper clinical assessment at the time of admission is important. Scoring systems are need of the hour to predict the mortality or outcome at the time admission itself. Many scoring systems are available throughout the world.Inour country were still many investigation and treatment has not reached the grass root level and still a good clinical assessment supersedes all technology.

In developing countries like India triage is essential for prioritising care,and answering parents questions about the outcome, duration of hospital stay, cost of diagnostic modalities and treatment.

Early recognition of very sick children might reducethe mortality and morbidity. Most of the scoring system now used for intensive care patients is not used at admission. Hence they are not useful in triaging the sick children.

Inaddition to this scoring systems are exhaustive, time consuming and requires various physical and laboratory parameters making them expensive and difficult to implement in emergency department.

In the present study a simple scoring system 'TOPRS' has been evolved using only vital signs to predict the severity of illness and mortality in paediatric ED. This score was developed in Ludhiana and studied in a tertiary care hospital with prediction accuracy of 84%.

Our study aims at using similar TOPRS score in tertiary care hospital in Tirunelveli to evaluate its usefulness in prediction of mortality in our population.

1.1 Benefits of Scoring System

It provides an objective value for the outcome variables being studied. It is useful for

- Mortality prediction
- Triaging sick children
- Prioritising care
- Cost effective
- Fund allocation
- Less time consuming
- Performance assessment between institutions
- Does not require any expertise even paramedics can apply

Scoring System is arrived at evaluation of the patient's mortality risk in the ICU by assigning a score to patient and predicting the outcome.

1.2 SCORING SYSTEM IN PAEDIATRIC INTENSIVE CARE UNIT PAST, PRESENT AND FUTURE

The first scoring system in paediatrics is APGAR[1]scoring system developed by Virginia Apgar in 1952 for the neonatal outcome based on objective assessment of respiratory, cardiovascular and neurological system of baby.

1.3 TYPES OF SCORING SYSTEMS

Initially scoring systems were developed for trauma patients

1.3.1 Based on Anatomical methodslike

1. Abbreviated injury scale 1969.
2. Burnscore 1971.
3. Injury severityscore 1974.

1.3.2 Based onphysiological methods

1. Trauma index 1971
2. Glasgowcoma scale 1974
3. Sepsis score 1983.

1.3.4Based on Therapeutic Intervention scoring system (TISS)

In 1974 therapeutic intervention scoring system [TISS] was introduced by Cullen D J et al to quantitate the severity of illness according to the therapeutic interventions received by the patients.

1.3.5 Physiologic stability Index [PSI][2]

PSI was developed by a group of paediatric intensivistin 1984 from TISS. PSI assesses the mortality in paediatric intensivecare patients by quantitating the extent of abnormalities in 34 variables from 7 major physiologic systems. PSI however is time consuming and also is a subjective score.

1.3.6 PRISM [Paediatric Risk of Mortality][3]

PRISM was developed from PSI to reduce the number of variables from 34 to 14 and number of ranges from 75 to 23 without losing the predictive power by Pollack MM et al in 1988.

(PRISM - III) The prism III score is an improved version of PRISM score developed at Children National Medical Central in Washington Dc based on datacollected at 32 PICU patients. PRISM III has 17 physiological variables sub divided into 26 ranges and is population independent.

PRISM III takes 24 hours to complete and can’t be used in regulating admissions to PICU or immediate mortality prediction. They have been used for assessing relation between severity of illnessand length of stay or cost.

1.3.7 PRISM III - APS (PRISM Acute physiology score)

It has 59 ranges of 21 variables. It was designed to have a broad severity scale from 0-356 with higher values indicating higher instability.

Compared with PRISM III, PRISM III APS should be more sensitive to small changes in physiologic status even those may not contribute to mortality risk.

1.3.8 Other scoring system in Paediatric

- P-MODS [Paediatric Multi Organ Dysfunctions Score]
- DORA [Dynamic Objective Risk Assessment]
- CRIB II[4] [Clinical Risk Index for Babies]
- SNAP [Score for Neonatal Acute Physiology]
- SNAP-PE [Score for Neonatal Acute Physiology – Perinatal Extension][5]
- MSSS [Meningococcal Septic Shock]
- GMSPS [GlassgowMeningococcalSepticemiaPrognostic Score]
- Paediatric Trauma Score
- NTISS [Neonataltherapeutic intervention score]

1.3.9 Neonatal Scores[6]

1.3.9.1 SNAP II [Score for Neonatal Acute Physiology]

SNAP II is an important measure of degree of mortality of newborn admissions.The parameter includes temperature, Blood Pressure, PaO_2/FiO_2, Sr.pH& seizures.

1.3.9.2 SNAP-PE [Score for Neonatal Acute Physiology – Perinatal Extension]

In this, assessment oftemperature, Blood Pressure, PaO_2/FiO_2, Sr.pH, seizures, gestational age and Apgar at 5 mins are included.

Thus scoring systems is used in Paediatric ranging from Neonatal Resuscitation, grading of level of consciousness, stratifying the severity of illness grading neuro behavioural states, prediction of mortality & research.

Thus the purpose of scoring system is to categorise illness which helps in early and timely intervention with available resource thus improving the outcome.

2. Review of Literature

The early identification of severity of illness is important for prioritizing treatment and allows proper utilization of limited resources in the developing world. Many scoring systems are available which relay on large number of physical and laboratory values making it unsuitable for practice in developing countries.

For the treatment of sick children presenting to hospitals in the developing world, WHO has formulated a set of guidelines[7] for triaging, assessing and treating the very sick children.

It prioritized the treatment of sick children depending upon the signs related to airway, breathing, circulation, coma, convulsions, confusion and dehydration to decrease the mortality.

The limitation of emergency triage, assessment and treatment is that it requires reorganizing of the existing health care system and special training of both staff and doctors.

In view of this tertiary care hospital in Ludhiana developed 'TOPRS' score based on physical criteria[8] alone. 6 variables (temperature, oxygen saturation, pulse rate, respiratory rate, seizure and sensorium) were noted at the time of admission to ED. These variables were categorised into normal and abnormal using the standard SIRS criteria and criteria outlined in PALS.

SIRS [Systemic Inflammatory Response Syndrome][9]:

'SIRS, is an inflammatory cascade that is initiated by the host response to an infection or non-infectious stimuli'. This cascade of inflammation is triggered when host defences mechanisms does not appropriately respond to the triggering event.

It is diagnosed by 2 out of 4 criteria,(which must be abnormal temperature or abnormal Leukocyte count).

1. Core temperature > 38.5^{o} C or < 36^{o}C [rectal, bladder, Oral or Central Catheter]
2. Tachycardia

Mean heart rate >2SD above normal for age in absences of external stimuli, Chronic drugs or painful stimuli

Or

Unexplained persistantelevation over 30min to 4 hours

Or

Children < 1 year old, persistantbradycardia over 0.5 hours < mean heart rate < 10th percentile for age in absence of vagal stimulate, beta blocker drugs or congenital heart disease

3. Respiratory rate > 2SD above normal for age or acute need for mechanical ventilation not related to neuro muscular disease or general anaesthesia.
4. Leucocyte count elevated or depressed for age [not secondary to chemotherapy or >10% immature neutrophils]'

The children with SIRS may go on to developed multi organ dysfunction syndrome. This team took physical variables of SIRS and excluded bio-chemical and laboratory parameters and tested if this score could predict mortality. TOPRS score is a clinical score consisting of six variables based on SIRS and APLS[10] criteria. This study done in Ludhiana primarily looked at evolving a triage[11] score for severity of illness.

2.1 Evolution of TOPRS Clinical Scoring System

Kumar[12] et al from Dayanad Medical College, Ludhiana evaluated the TOPRS clinical scoring system as a triage scoring system for mortality basedon clinical variables defining SIRS.

The acromyn TOPRS stands for (temperature, oxygen saturation, Heart rate, Respiratory Rate, Sensorium, seizure)

Consecutive patient admitted in ward & PICU were studied.Temperature measured by axillary thermometer. HR, RR were noted.Oxygen saturation measured by pulse oximeter, sensorium assessed on AVPU scale and presence of seizure noted.

Normal variables given a score of 0 and abnormal variables given a score of 1.Initial data kept confidential and final outcome death / discharge was recorded. Out of 777 children studied 28% female children, 72% male children, 127 children expired. Each variable was studied with outcome by univariate analysis.The sensitive variables were further analysed by multiple logistic regression to evaluate the extent of association of each variable with outcome.

In this study it was found out that the increase in number of abnormal variables in 'TOPRS'score caused a s significant increase in mortality and ROC analysis showed a predictive ability score of 81.7%.

Table: 2.1 Association of study variables with outcome

vitals		discharged		death		Odds Ratio	P Value
		No	%	No	%		
Temperature	Normal	600	86.21	96	13.79	3.88	0.04
	Abnormal	50	61.73	31	38.27	1.10-4.06	
O2 Saturation	Normal	644	88.83	81	11.17	60.95	<0.01
	Abnormal	6	11.54	46	88.46	14.71-93.61	
Pulse Rate	Normal	568	87.25	83	12.75	3.67	0.2
	Abnormal	82	65.08	44	34.92	0.85-2.97	
Respiratory Rate	Normal	539	92.77	42	7.23	9.83	<0.01
	Abnormal	111	56.63	85	43.37	3.74-10.52	

Sensorium	Normal	592	85.67	99	14.33	2.89	0.06
	Abnormal	58	66.44	28	32.56	0.93-10.80	
Seizures	Normal	589	84.99	104	15.01	2.14	0.9
	Abnormal	61	72.62	23	27.38	0.26-3.35	

Similar study was done by Gupta[13] et al in India and England, outcome was assessed using SICK[14] SCORE (Same SIRS criteria) and the same score was given. The predictive ability of the score was demonstrated to be 84.1% with the score cut off of2.5 with sensitivity of 79.6 and specificity of 74.4%.

Thus it was concluded that any sick child presenting to our ED with more than 2 abnormal vital signs should be admitted and provided early intervention as they are at a higher risk of mortality.

3.EPIDEMIOLOGY

India has the highest number of child birth as well as child death for any single nation in the world. Each year 27 million babies are born in our country. This comprises 20% of global birth cohort,Of the 7.8million under 5 child death in the world each year, 1.7 million (23%) occur in our country.

Table:3 Child mortality Index of India

Index	Rate/1000 live birth	Year
Under 5 mortality	90	2002
	59	2015
IMR	47	2015
NMR	33	2010

Indian Medical Statistics, ICMR

3.1 MDG Goal by 2015

Under 5 mortality - 39/1000

IMR - 29/1000

3.2 Child mortality Index of Tamil Nadu predicated for 2015

Under 5 mortality - 21/1000

IMR - 19/1000

In terms of under 5 mortality India ranks 46th among 193 countries. The under 5 mortality India is 64/1000 is unacceptably high given our status as an economic, scientific and stragic power.Under 5 mortality in Japan 3/1000, USA 8/1000, Sri Lanka 17/1000, China 18/1000 and Brazil 19/1000 is worth comparing with that of India.

Reduction in IMR is the foremost development goal of the country. India is signatory of millennium declaration and thereby committed to MDG. The MDG is encompasses decrease in under 5 mortality by 2/3 by 2015 from 1990, since under 5 mortality in 1990 was 117/1000 live birth. MDG goal is to attain under 5 mortality of 39/1000 by 2015. This corresponds to IMR of 29/1000 live birth.

3.3 Challenges

India is lagging far behind in reducing mortality rates, compared to other Asian developing countries like China, Indonesia, Thailand.

When compared to Bangladesh and Srilanka the level of IMR is much higher in India.From 1960 to 1990 the rate of reduction in mortality rate was 50%. Now in 2010 the reduction in mortality rate was 2.11% .This slowing down of the rate of reduction in mortality is worrisome and this calls for new approaches, priorities and strategies to reduce mortality among children.

4. STUDY JUSTIFICATION

Mortality in tertiary level institute depends upon early identification and effective management of critical illness.

TVMCH is a tertiary care centre in Government Sector which is the principal referral unit for southern districts of TamilNadu which treats many epidemics and endemic diseases. The mortality rate of TVMCH in the Department of Paediatrics is 4.4% for the year.

As the institute harbours large population providing quality care with limited resources mortality prediction will be useful in prioritising care and allocation of available resources.

The PRISM III APS score is very good mortality predictor with many limitation. Hence the need for a clinical scoring system for developing countries like India for prediction of mortality at admission is a real necessity.

TOPRS score is a clinical score that can predict mortality at admission.

5. OBJECTIVE

5.1 Primary

To validate the usefulness of TOPRS clinical scoring system in predicting mortality at the time of admission in a Government tertiary care Hospital in Tirunelveli.

5.2 Secondary

To identify the factors contributing to mortality

6. METHODOLOGY

6.1 Study Methodology

This study is a prospective study using a clinical scoring system TOPRS to assess the morbidity andmortality on admission and compare the outcome in children admitted in TVMCH.

6.2 Inclusion Criteria

All patients admitted in I, II, III unit and IMCU and PICU was forming study population.

6.3 Duration of study

- Six Months.

6.4 Exclusion Criteria

- Children below the age of One month, Patients leaving the hospital against medical advice, patient admitted in surgical side, brought dead were excluded from study.

7. MANOEUVRES

All children admitted are assessed with TOPRS score.The variables Temperature, Oxygen Saturation, Heart rate, Sensorium and Seizure were noted on a pre-designed Performa at the time of admission. Mercury thermometer was used to measure axillary temperature.Pulseoximeter was used to measureOxygen saturation. Heartrate, respiratory rate noted. Sensorium by AVPU scale and presence of seizure noted.

All abnormal values of temperature, pulse rate, respiratory rate, spo2 given score1. Normal values as score-0.Consciousness noted according to AVPU scale expect alert (A) all other state of consciousness were taken as abnormal. Presences of seizure at the time of admission given abnormal score-1.

The hospital discharge status (death/ discharge) was the primary outcome variable.

Table:7.1 Scores of abnormal clinical variables

	Variables	Abnormal Range		
1	Temperature	>38^{0}C <36^{0}C		
2	Heart Rate	<1 Year	>180	<100
		2 - 5 Y	>140	<90
		6 - 12Y	>130	
3	Respiratory Rate	<1 Year	>60	Or Requiring respiratory support
		2 - 5 Y	>50	
		6 - 12Y	>18	
4	SPO_2	90 %		
5	Sensorium			
	A - Alert V - Verbal P - Pain responsive U - Unresponsive	Any one expect alert		
6	Seizure	Present at the time of admission		

8. ANALYSIS OF OBSERVATION

The study was carried out by enrolling 300 Children. After getting clearance from our INSTITUTE ETHICAL COMMITTEE and collected data analysed using SPSS software package. Quantitative data difference between death and discharge children was analysed using chi-square test. Cut off point of TOPRS score for mortality and predictive ability of the test was arrived using Receiver Operative Curve (ROC).

Association of age, sex compared with abnormal scores and outcome to find their association with mortality, statistically analysis was done by Chi-square test. Each individual variables of scoring system and their association with mortality were analysed. Factors that seem to contribute significantly to mortality was further analysed by logistic regression model. ROC was used to assess the predictive ability score

8.1 Receiver operating curve[15] (ROC)

During validating a scoring system discrimination and calibration are measured. Discrimination - ability of the test to give true positive and true negative. The cut offs are plotted to give ROC.

An ROC curve demonstrate several parameters

- It shows the association between sensitivity and specificity (an increase in sensitivity is inversely related tospecificity).

- The test is more accurate when the curve follows left hand border and the top border of the ROC space.
- The test is less accurate when the curve comes to 45 degree diagonal of ROC space.
- Test accuracy is determined by the area under the curve.
- A perfect test is the one having the area of one.
- A worthless test is the one having an area of 0.5.

A guide for classifying the accuracy of the diagnostic test is the traditional academic point system.

[0.90 - 1 = Excellent (A)

0.8 - 0.9 = Good (B)

0.7 - 0.8 = Fair (C)

0.6 - 0.7 = Poor (D)

0.5 - 0.6 = Fail (F)]

Receiver operating curve was used to arrive at the cut of point of TOPRS score for predicting mortality.

8.2 Over all clinical pictures

The clinical picture was studied in relation to age, sex and mortality.

8.2.1 Age distribution

Children between age group of one month to 12 years where included.

Table:8.1 Age distribution

AGE GROUP	NO. OF CASES
1-0.5 Y	50
.5-1	48
1-2	24
2-3	34
3-4	24
4-5	20
5-6	18
6-7	10
7-8	20
8-9	8
9-10	24
10-11	26
11-12	24

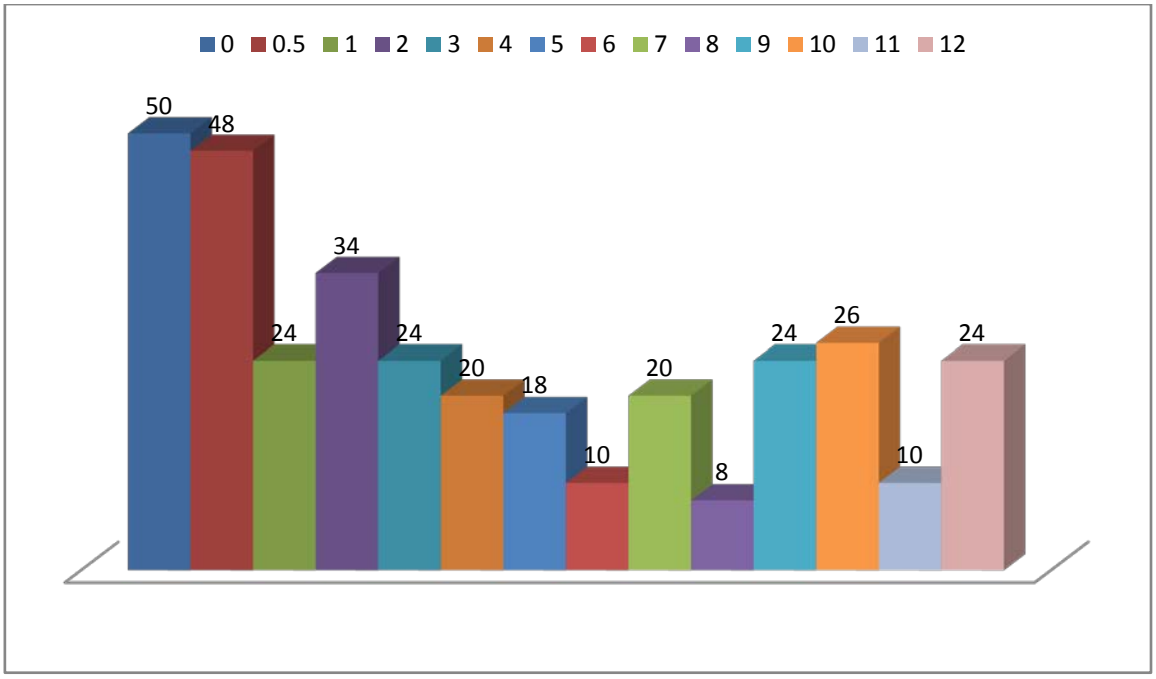

Figure: 1 Graph Showing Age distribution

Table: 8.2 MEAN OF AGE DISTRIBUTION

	N	Minimum	Maximum	Mean	Std. Deviation
Age in years	300	0.1	12.0	4.247	3.7074
Total Score	300	0	6	.82	1.178
Valid N (listwise)	300				

Table: 8.3 Frequency Table

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	<= 3	161	53.7	53.7	53.7
	> 3	139	46.3	46.3	100.0
	Total	300	100.0	100.0	

8.2.2 Sex Distribution

In this study of 300 children 162 were male and 138 were females.

Table: 8.4 Sex Distribution

MALE	162	300
FEMALE	138	

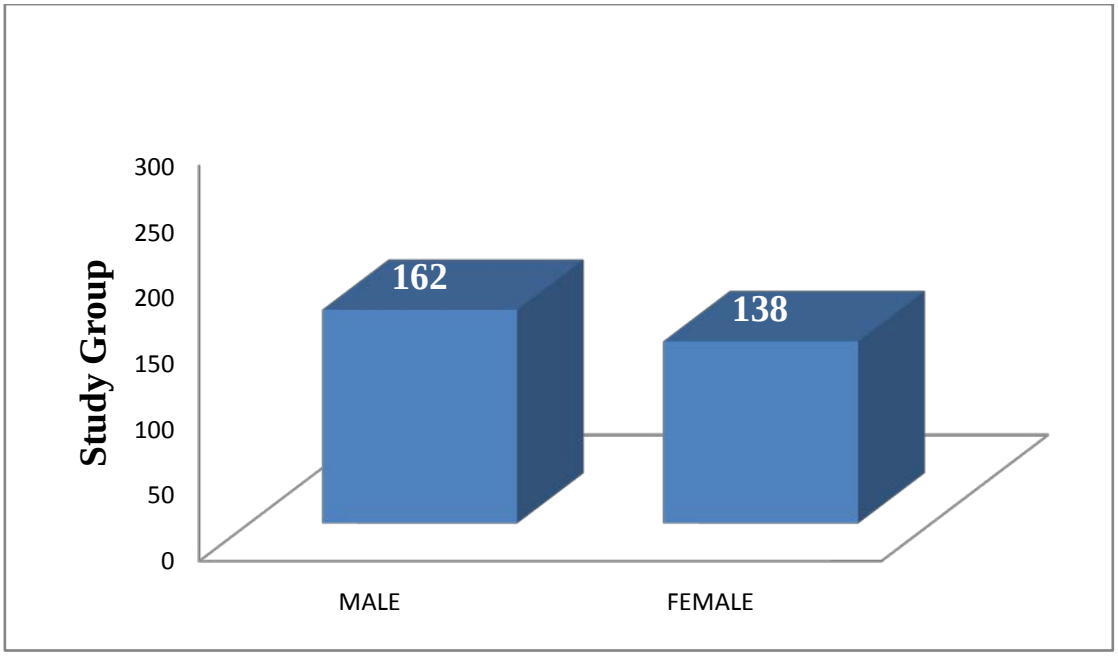

Figure: 2 Graph showing sex distribution

8.2.3 Clinical Diagnosis

Diagnosis of the children enrolled was classified based on the system involved and distribution of the diseases given below

Infectious group defined as those with no definite focus of infection.

Other had clinical and investigatory evidence of a definite focus of infection. He or she was classified under that system.

Table: 8.5 DISTRIBUTION OFClinical Diagnosis

System	No. of cases
Cardiac (C)	10
Gastro intestinal (G)	42
Haematological (H)	22
Infectious (I)	68
Neurological (N)	52
Respiratory (R)	50
Renal (U)	28
Scorpion Sting (SS)	4
Unknown bite (UB)	8
Sepsis (S)	10
Others	6
Total	300

Infectious cause without any focus followed by respiratory and neurological were the commonest cause for admission,distribution of the clinical diagnosis in our study population is depicted below.

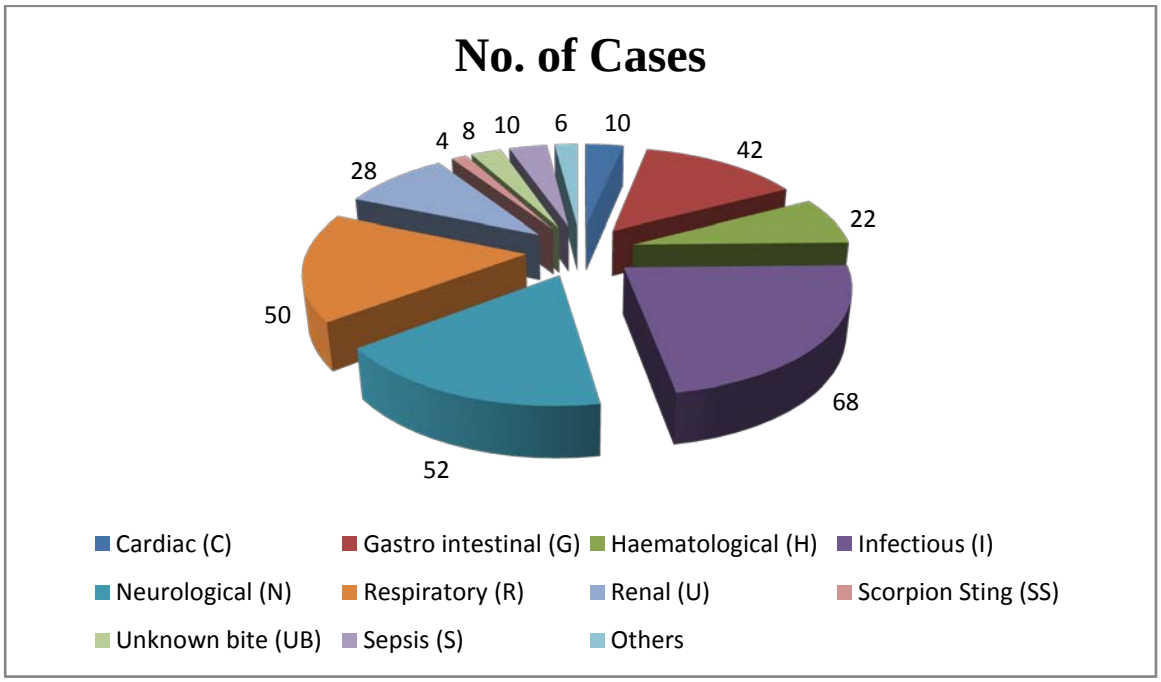

Figure: 3 Chart showing Clinical Diagnosis

8.2.4 Mortality

Infectious cause without any focus was the major cause of admission followed by respiratory and neurological. Morality was highest due to respiratory and neurological cause followed by septic shock and cardiac cause.

The disease included in others are Septic arthrits(Ortho), Congenital epidermolysisbullosa

Table: 8.6DISTRIBUTION OF Mortality

System	Discharge	Death	No. of cases
Cardiac (C)	6	4	10
Gastro intestinal (G)	38	4	42
Haematological (H)	20	2	22
Infectious (I)	67	1	68
Neurological (N)	46	6	52
Respiratory (R)	44	6	50
Renal (U)	28	-	28
Scorpion Sting (SS)	4	-	4
Unknown bite (UB)	8	-	8
Sepsis (S)	7	3	10
Others	6	-	6
Total			300

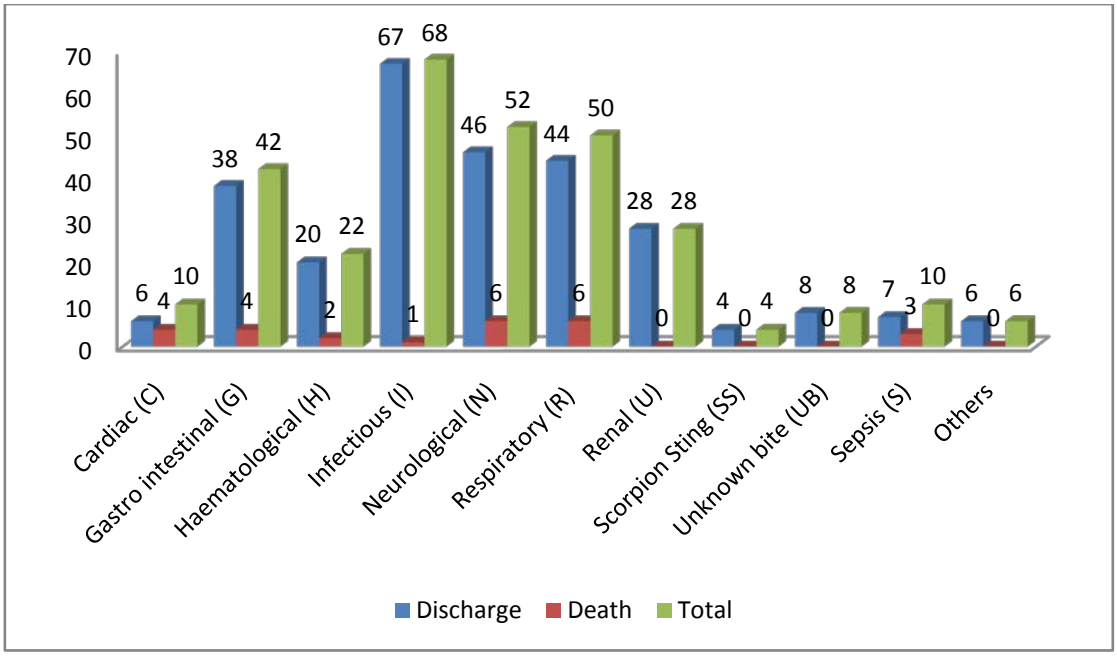

Figure: 4Graph showing Mortality Distribution

8.2.5 Variables and their score distribution

Individual variables and their percentage of their abnormal distribution are discussed.

8.2.5.1 Temperature

Table: 8.7 DISTRIBUTION OFTEMPERATURE

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	244	81.3	81.3	81.3
	Abnormal	56	18.7	18.7	100.0
	Total	300	100.0	100.0	

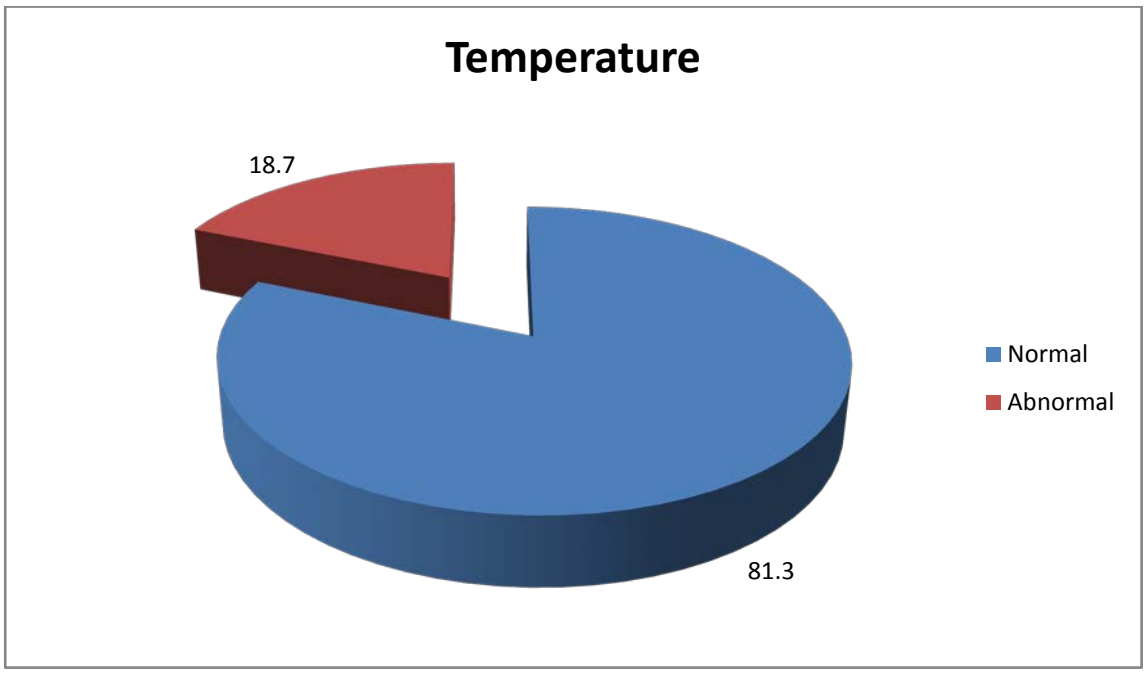

Figure: 5 Chart showing Temperature Distribution

Out of 300 children studied 244 scored normal score and 56 scored abnormal scored. i.e., 81.3 % of study population has normal score (0). & 18.7% of study population has abnormal score (1).

8.2.5.2 SPO2

In the overall 300 children oxygen saturation was normal for 264 children and abnormal for 36 cases with 88% of the study population scored normal and 12% of the study population scored abnormal.

Table: 8.8DISTRIBUTION OFSPO2

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	264	88.0	88.0	88.0
	Abnormal	36	12.0	12.0	100.0
	Total	300	100.0	100.0	

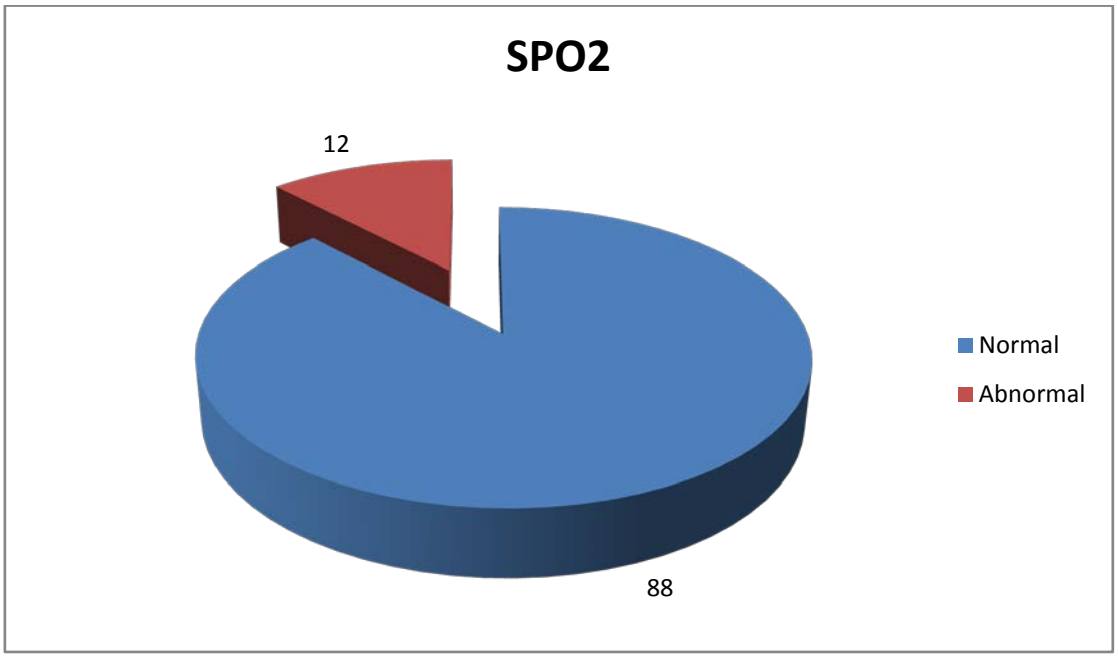

Figure: 6 Chart showing SPO2 Distribution

8.2.5.3 HEART RATE

Out of 300 studied population 273 children scored normal score and 27 children scored abnormal score accounting for 91% of the study population with normal score and 9% of the study population has abnormal score .

Table: 8.9 DISTRIBUTION OFHEART RATE

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	273	91.0	91.0	91.0
	Abnormal	27	9.0	9.0	100.0
	Total	300	100.0	100.0	

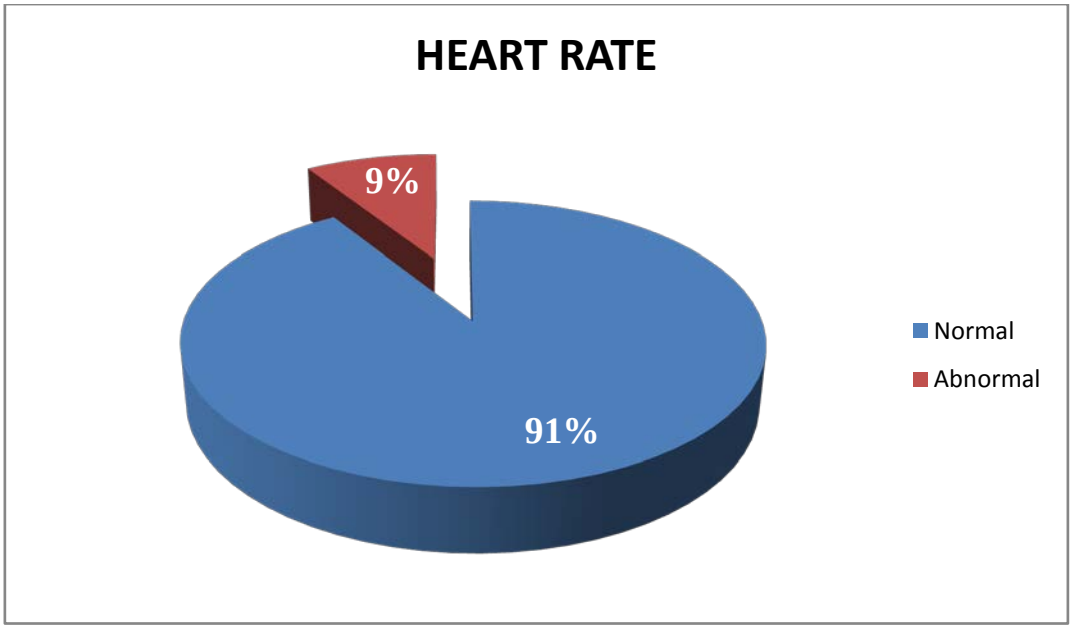

Figure: 7 Chart showing HEART RATE Distribution

8.2.5.4 RESPIRATORY RATE

Out of 300 studied population 239 children scored normal score and 61 children scored abnormal score accounting for 79.7% of the study population with normal score and 20.3% of the study population has abnormal score .

Table:8.10 DISTRIBUTION OF RESPIRATORY RATE

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	239	79.7	79.7	79.7
	Abnormal	61	20.3	20.3	100.0
	Total	300	100.0	100.0	

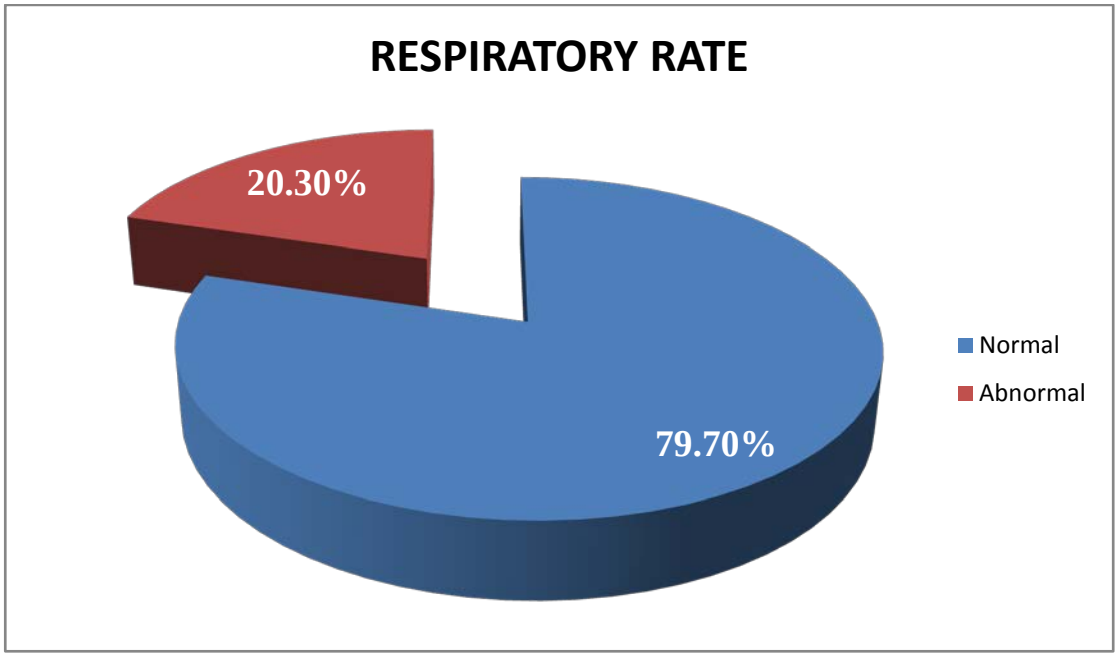

Figure: 8 Chart showing Respiratory Rate Distribution

8.2.5.5 SENSORIUM

Out of 300 studied population 263 children scored normal score and 37 children scored abnormal score accounting for 87.7% of the study population with normal score and 12.3% of the study population has abnormal score .

Table: 8.11 DISTRIBUTION OFSENSORIUM

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	263	87.7	87.7	87.7
	Abnormal	37	12.3	12.3	100.0
	Total	300	100.0	100.0	

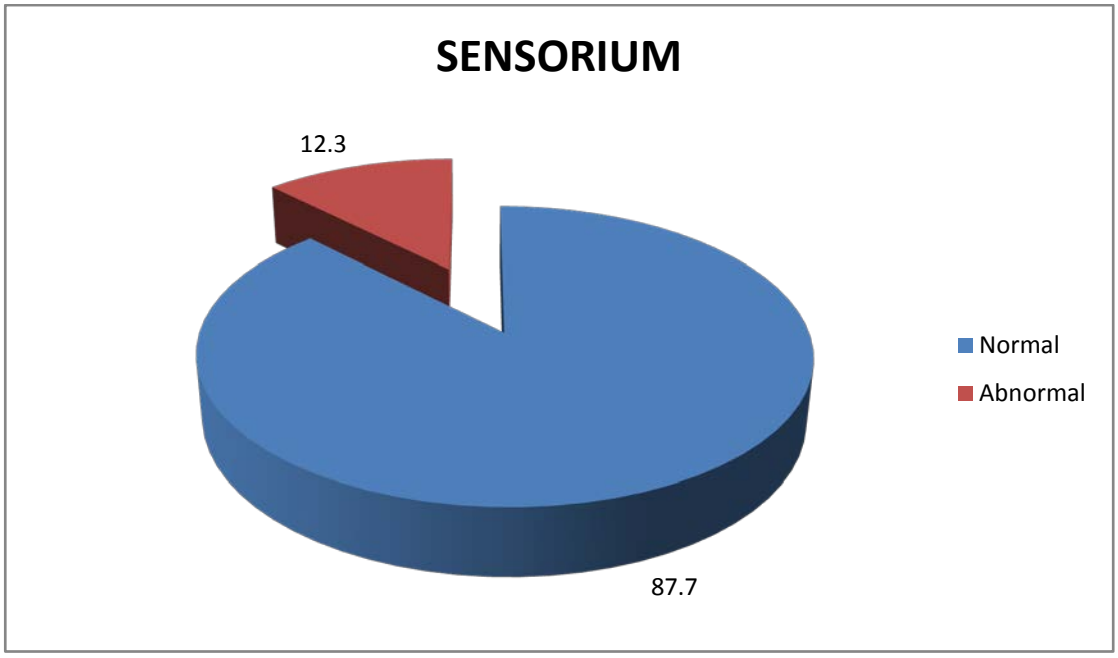

Figure: 9 Chart showingSensorium Distribution

8.2.5.6 SEIZURES

Out of 300 studied population 273 children scored normal score and 27 children scored abnormal score accounting for 91.0% of the study population with normal score and 9.0% of the study population has abnormal score .

Table: 12 DISTRIBUTION OFSEIZURES

		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Normal	273	91.0	91.0	91.0
	Abnormal	27	9.0	9.0	100.0
	Total	300	100.0	100.0	

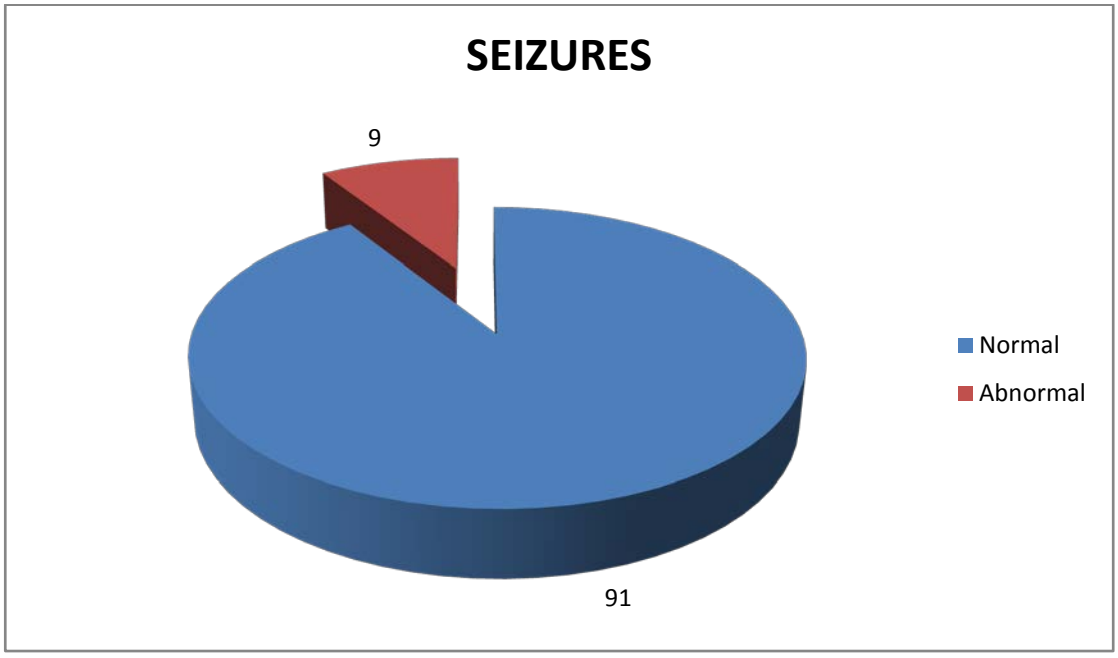

Figure: 9 Chart showing SeizuresDistibution

8.2.6 Variables and Age distribution

8.2.6.1 Age in years vs. Temperature

Table: 13 Age in years vs. Temperature

			Temperature		Total
			Normal	Abnormal	
Age in years	<= 3	Count	131	30	161
		% within Age in years	81.4%	18.6%	100.0%
		% within Temperature	53.7%	53.6%	53.7%
	> 3	Count	113	26	139
		% within Age in years	81.3%	18.7%	100.0%
		% within Temperature	46.3%	46.4%	46.3%
Total		Count	244	56	300
		% within Age in years	81.3%	18.7%	100.0%
		% within Temperature	100.0%	100.0%	100.0%

Table: 14 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.000(b)	1	.987		
Continuity Correction(a)	.000	1	1.000		
Likelihood Ratio	.000	1	.987		
Fisher's Exact Test				1.000	.552
Linear-by-Linear Association	.000	1	.987		
N of Valid Cases	300				

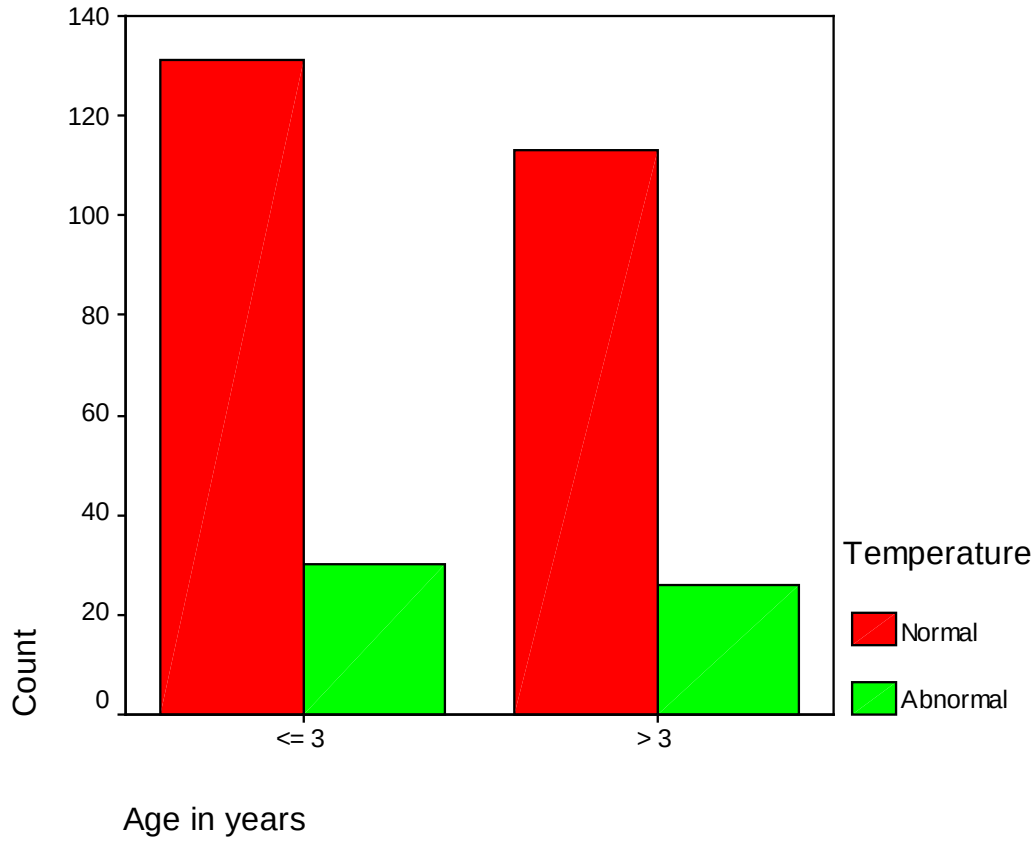

Figure: 10 Graph showing Age in years vs. Temperature Distribution

The distribution of abnormality of temperature in age < 3 years and age > 3 years is equal. There is no statistical significances or correlation between temperature abnormality & age.

8.2.6.2 Age in yearsvs. SPO2

Table: 14 Age in years vs. SPO2

			SPO2		Total
			Normal	Abnormal	
Age in years	<= 3	Count	134	27	161
		% within Age in years	83.2%	16.8%	100.0%
		% within SPO2	50.8%	75.0%	53.7%
	> 3	Count	130	9	139
		% within Age in years	93.5%	6.5%	100.0%
		% within SPO2	49.2%	25.0%	46.3%
Total		Count	264	36	300
		% within Age in years	88.0%	12.0%	100.0%
		% within SPO2	100.0%	100.0%	100.0%

Table: 15 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.488(b)	1	.006		
Continuity Correction(a)	6.544	1	.011		
Likelihood Ratio	7.864	1	.005		
Fisher's Exact Test				.007	.005
Linear-by-Linear Association	7.463	1	.006		
N of Valid Cases	300				

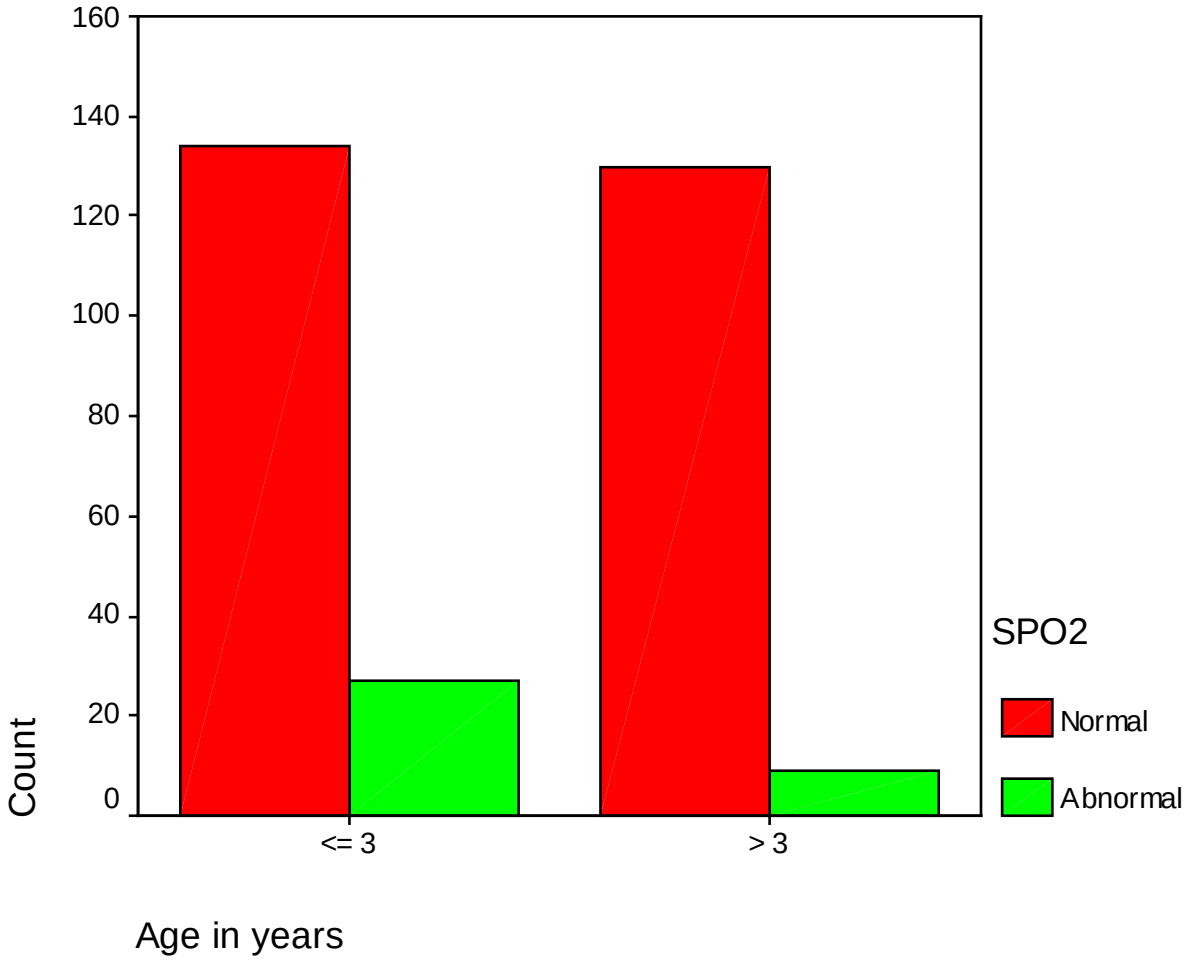

Figure: 11 Graph showing Age in years vs. SPO2 Distribution

The distribution of abnormality of SPO2 in age < 3 years is more when compared to age > 3 years. When chi square test was applied its shows statistical significance. P value 0.006 [significant at 5%] .

8.2.6.3 Age in yearsvs.Heart Rate

Table: 16 Age in years vs.Heart Rate

			HR		Total
			Normal	Abnormal	
Age in years	<= 3	Count	137	24	161
		% within Age in years	85.1%	14.9%	100.0%
		% within HR	50.2%	88.9%	53.7%
	> 3	Count	136	3	139
		% within Age in years	97.8%	2.2%	100.0%
		% within HR	49.8%	11.1%	46.3%
Total		Count	273	27	300
		% within Age in years	91.0%	9.0%	100.0%
		% within HR	100.0%	100.0%	100.0%

Table: 17 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.803(b)	1	.000		
Continuity Correction(a)	13.288	1	.000		
Likelihood Ratio	16.982	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	14.754	1	.000		
N of Valid Cases	300				

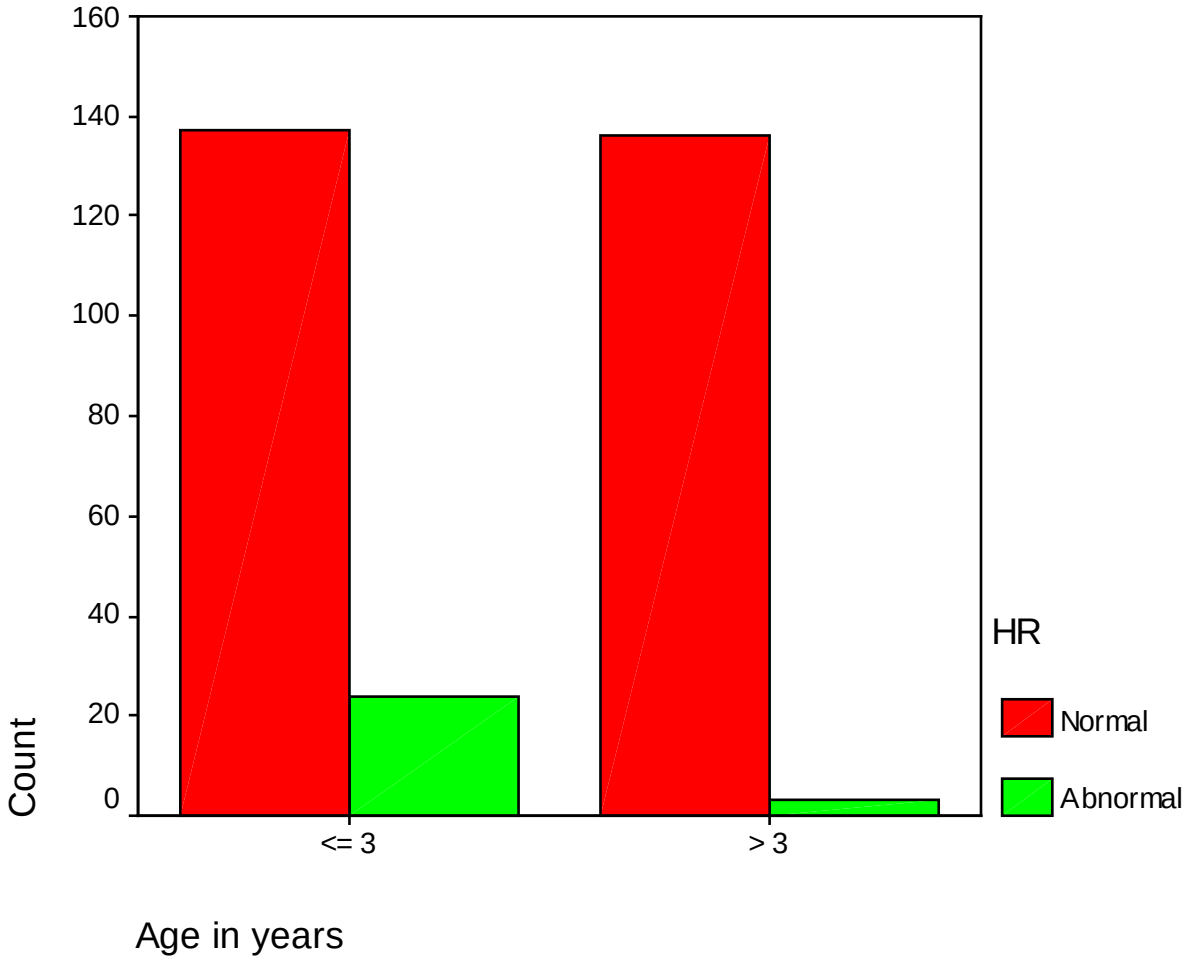

Figure: 12 Graph showing Age in years vs.Heart RateDistribution

The distribution of abnormality of Heart Rate is more in age < 3 years when compared to age > 3 years. When chi square test was applied it shows statistical significance. P value <0.001** [significant at 1%] .

8.2.6.4 Age in years vs. Respiratory Rate

Table: 17 Age in years vs. Respiratory Rate

			RR		Total
			Normal	Abnormal	
Age in years	<= 3	Count	117	44	161
		% within Age in years	72.7%	27.3%	100.0%
		% within RR	49.0%	72.1%	53.7%
	> 3	Count	122	17	139
		% within Age in years	87.8%	12.2%	100.0%
		% within RR	51.0%	27.9%	46.3%
Total		Count	239	61	300
		% within Age in years	79.7%	20.3%	100.0%
		% within RR	100.0%	100.0%	100.0%

Table: 18 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.499(b)	1	.001		
Continuity Correction(a)	9.587	1	.002		
Likelihood Ratio	10.865	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.464	1	.001		
N of Valid Cases	300				

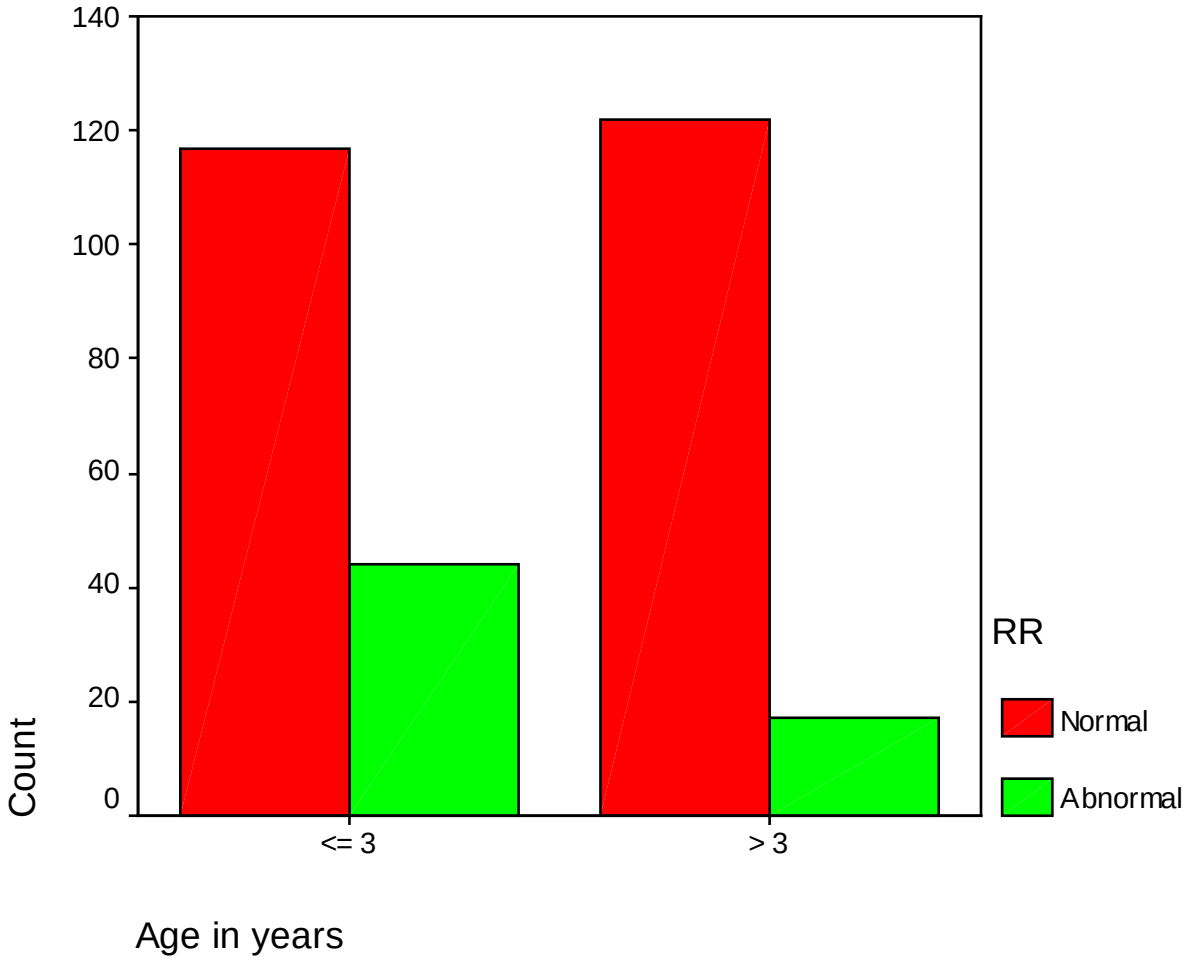

Figure: 13 Graph Showing Age in years vs. Respiratory RateDistribution

The distribution of abnormality of RespiratoryRate is more in age < 3 years than age > 3 years. On analysis it shows statistical significance. P value <0.001** [significant at 1%].

8.2.6.5 Age in years vs. Sensorium

Table: 19 Age in years vs. Sensorium

			Sensorium		Total
			Normal	Abnormal	
Age in years	<= 3	Count	134	27	161
		% within Age in years	83.2%	16.8%	100.0%
		% within Sensorium	51.0%	73.0%	53.7%
	> 3	Count	129	10	139
		% within Age in years	92.8%	7.2%	100.0%
		% within Sensorium	49.0%	27.0%	46.3%
Total		Count	263	37	300
		% within Age in years	87.7%	12.3%	100.0%
		% within Sensorium	100.0%	100.0%	100.0%

Table: 20 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.327(b)	1	.012		
Continuity Correction(a)	5.472	1	.019		
Likelihood Ratio	6.592	1	.010		
Fisher's Exact Test				.013	.009
Linear-by-Linear Association	6.305	1	.012		
N of Valid Cases	300				

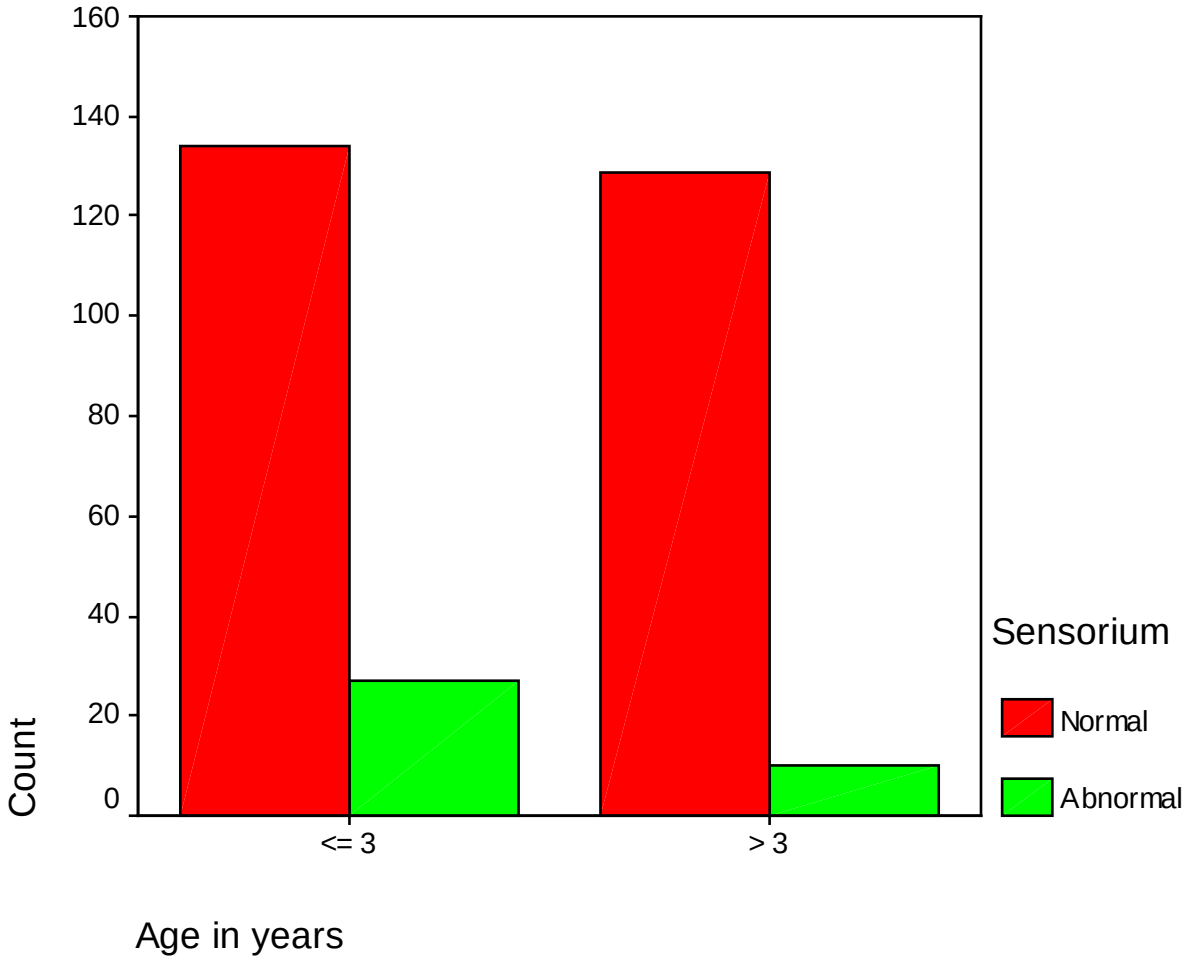

Figure: 14 Graph showing Age in years vs. SensoriumDistribution

In our study the distribution of abnormal sensorium is more in age <3years than age > 3years. On analysis it shows statistical significance.P value <0.012 [significant at 5%].

8.2.6.6 Age in years vs. Seizures

Table: 21 Age in years vs. Seizures

			Seizures		Total
			Normal	Abnormal	
Age in years	<= 3	Count	147	14	161
		% within Age in years	91.3%	8.7%	100.0%
		% within Seizures	53.8%	51.9%	53.7%
	> 3	Count	126	13	139
		% within Age in years	90.6%	9.4%	100.0%
		% within Seizures	46.2%	48.1%	46.3%
Total		Count	273	27	300
		% within Age in years	91.0%	9.0%	100.0%
		% within Seizures	100.0%	100.0%	100.0%

Table: 22 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.039(b)	1	.843		
Continuity Correction(a)	.000	1	1.000		
Likelihood Ratio	.039	1	.843		
Fisher's Exact Test				.843	.500
Linear-by-Linear Association	.039	1	.843		
N of Valid Cases	300				

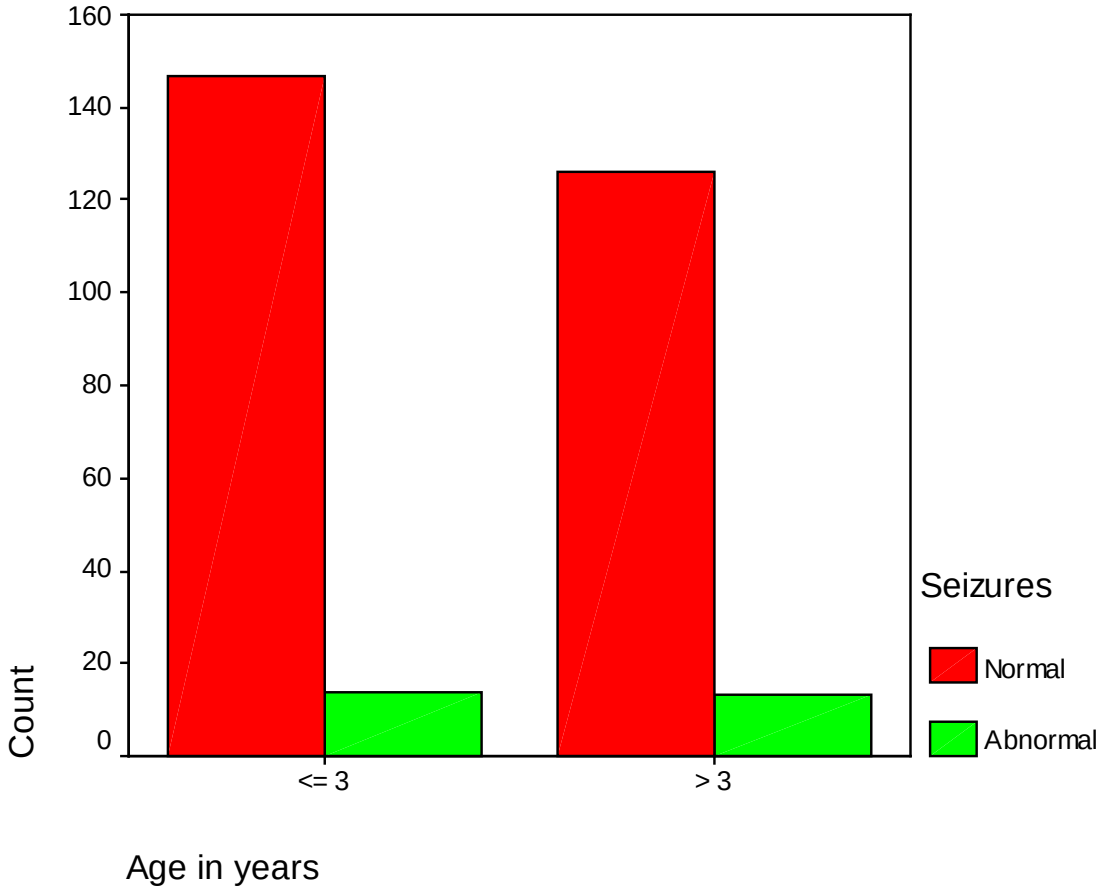

Figure: 15 Graph showing Age in years vs. SeizuresDistribution

The distribution of seizures is equal in both < 3years &>3years age group on analysis there is no statistical significance.

8.2.7 Age & Outcome

Table: 23 Age & Outcome

			Outcome		Total	P value
			Discharge	Death		
Age in years	<= 3	Count	138	23	161	<0.001**
		% within Age in years	85.7%	14.3%	100.0%	
		% within Outcome	50.4%	88.5%	53.7%	
	> 3	Count	136	3	139	
		% within Age in years	97.8%	2.2%	100.0%	
		% within Outcome	49.6%	11.5%	46.3%	
Total		Count	274	26	300	
		% within Age in years	91.3%	8.7%	100.0%	
		% within Outcome	100.0%	100.0%	100.0%	

Table: 24 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13.860(b)	1	.000		
Continuity Correction(a)	12.371	1	.000		
Likelihood Ratio	15.847	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	13.814	1	.000		
N of Valid Cases	300				

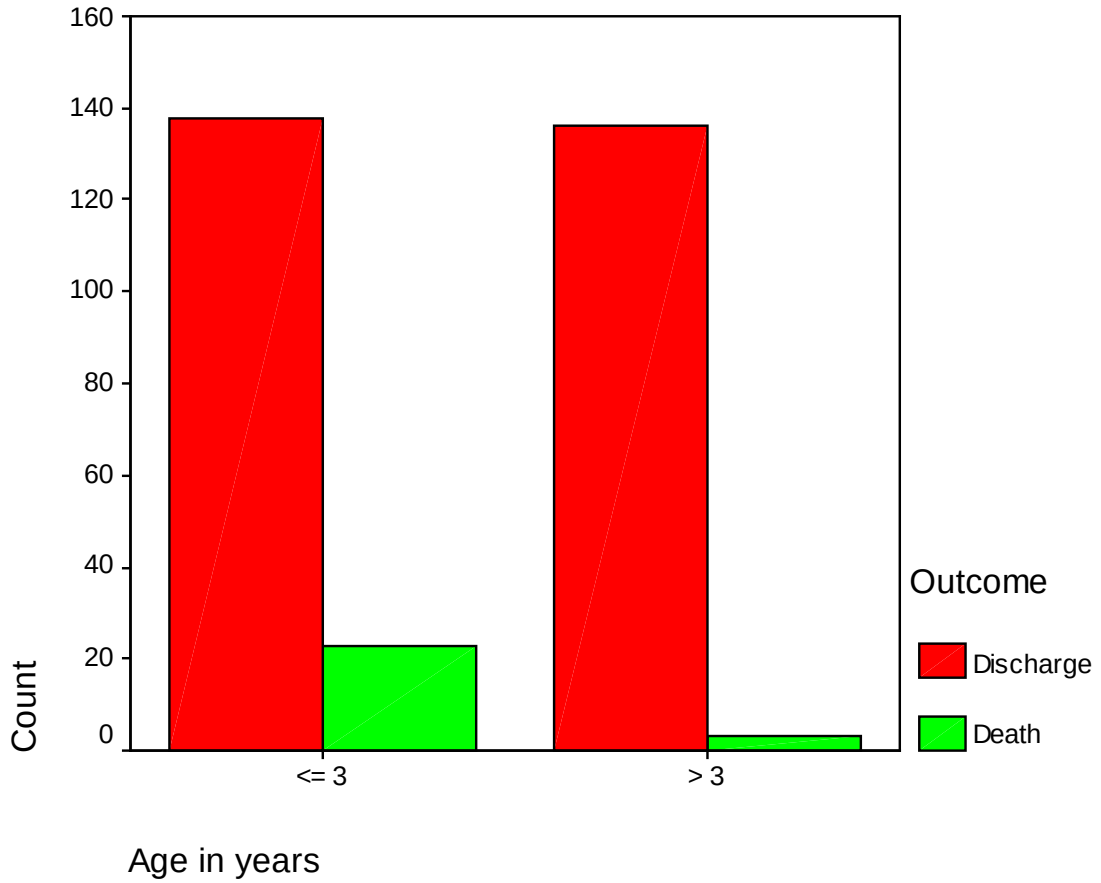

Figure: 16 Graph showing Age & OutcomeDistribution

In our study less than 3years were 161 children out of which 85.7% were discharged and 14.3% died.

In our studied children more than 3 years were 139.Out of which 97.8% were discharged and 2.2% died.

When chi square test was applied it clearly shows statistical significant the mortality increases with decreasing age.

8.2.8 Sex vs. Temperature

8.2.8.1 Temperature

Table: 25Sex vs. Temperature

			Temperature		Total
			Normal	Abnormal	
Sex	Male	Count	140	22	162
		% within Sex	86.4%	13.6%	100.0%
		% within Temperature	57.4%	39.3%	54.0%
	Female	Count	104	34	138
		% within Sex	75.4%	24.6%	100.0%
		% within Temperature	42.6%	60.7%	46.0%
Total		Count	244	56	300
		% within Sex	81.3%	18.7%	100.0%
		% within Temperature	100.0%	100.0%	100.0%

Table: 26 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.001(b)	1	.014		
Continuity Correction(a)	5.295	1	.021		
Likelihood Ratio	6.000	1	.014		
Fisher's Exact Test				.017	.011
Linear-by-Linear Association	5.981	1	.014		
N of Valid Cases	300				

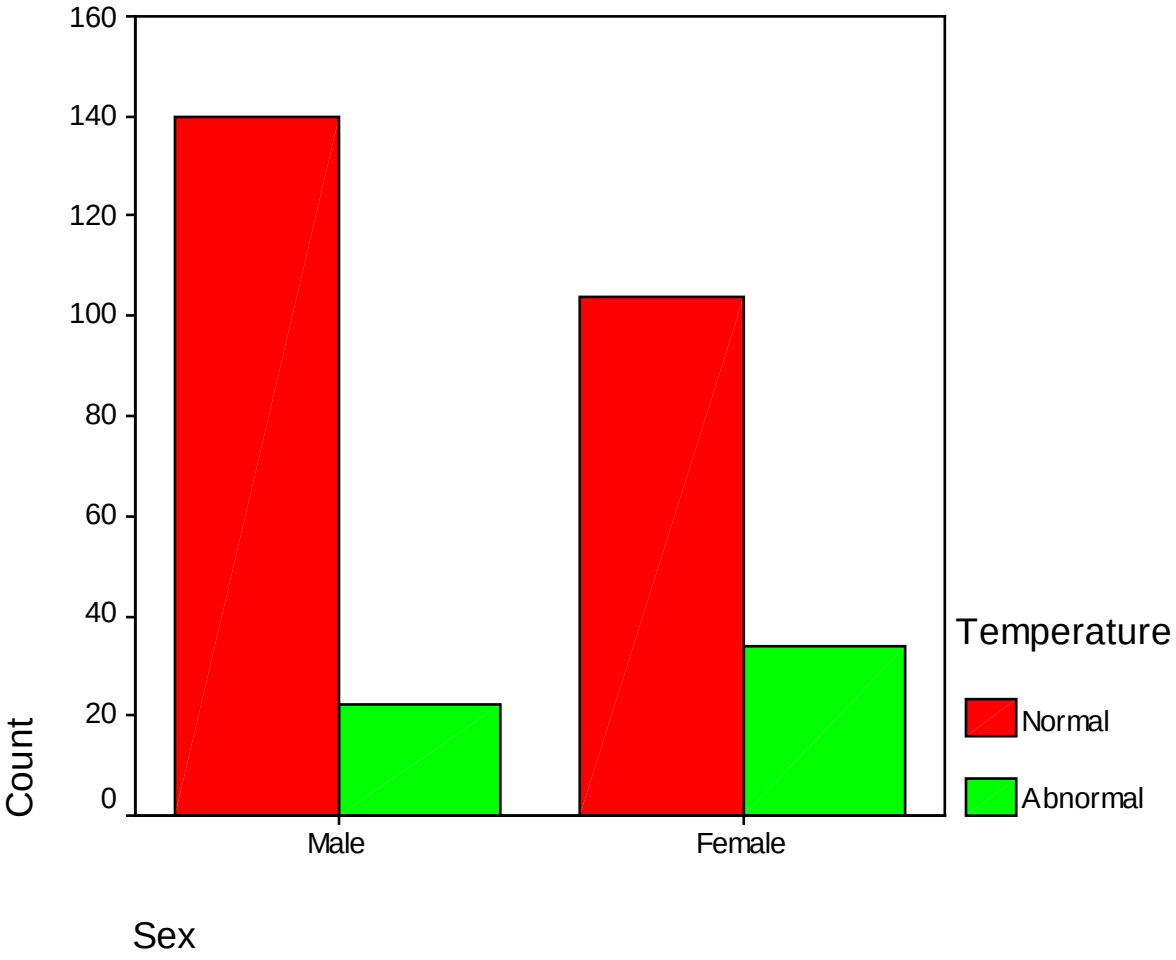

Figure: 17 Graph showingSex vs. TemperatureDistribution

The distribution of temperature abnormality is equal in both sexes.Statistical they are not significant P value 0.014

8.2.8.2 SPO2

Table: 27 SPO2

			SPO2		Total
			Normal	Abnormal	
Sex	Male	Count	149	13	162
		% within Sex	92.0%	8.0%	100.0%
		% within SPO2	56.4%	36.1%	54.0%
	Female	Count	115	23	138
		% within Sex	83.3%	16.7%	100.0%
		% within SPO2	43.6%	63.9%	46.0%
Total		Count	264	36	300
		% within Sex	88.0%	12.0%	100.0%
		% within SPO2	100.0%	100.0%	100.0%

Table: 28 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.270(b)	1	.022		
Continuity Correction(a)	4.484	1	.034		
Likelihood Ratio	5.284	1	.022		
Fisher's Exact Test				.031	.017
Linear-by-Linear Association	5.253	1	.022		
N of Valid Cases	300				

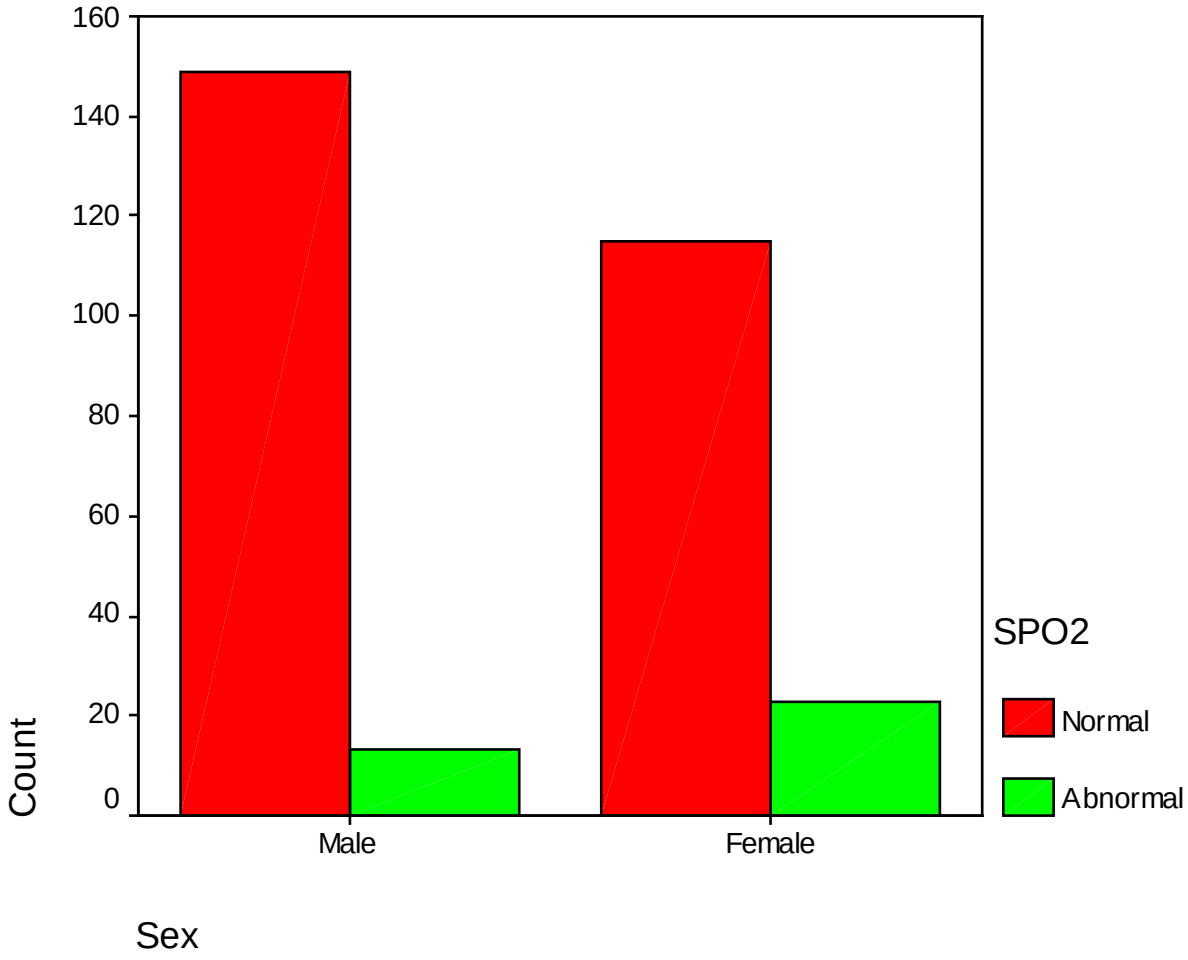

Figure: 18 Graph showing Sex vs. SPO2Distribution

The distribution of SPO2 abnormality is equal in both sexes statistical they are not significant**P value 0.022**

8.2.8.3 Heart Rate

Table: 29 Heart Rate

			HR		Total
			Normal	Abnormal	
Sex	Male	Count	150	12	162
		% within Sex	92.6%	7.4%	100.0%
		% within HR	54.9%	44.4%	54.0%
	Female	Count	123	15	138
		% within Sex	89.1%	10.9%	100.0%
		% within HR	45.1%	55.6%	46.0%
Total		Count	273	27	300
		% within Sex	91.0%	9.0%	100.0%
		% within HR	100.0%	100.0%	100.0%

Table: 30 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.091(b)	1	.296		
Continuity Correction(a)	.709	1	.400		
Likelihood Ratio	1.087	1	.297		
Fisher's Exact Test				.318	.200
Linear-by-Linear Association	1.087	1	.297		
N of Valid Cases	300				

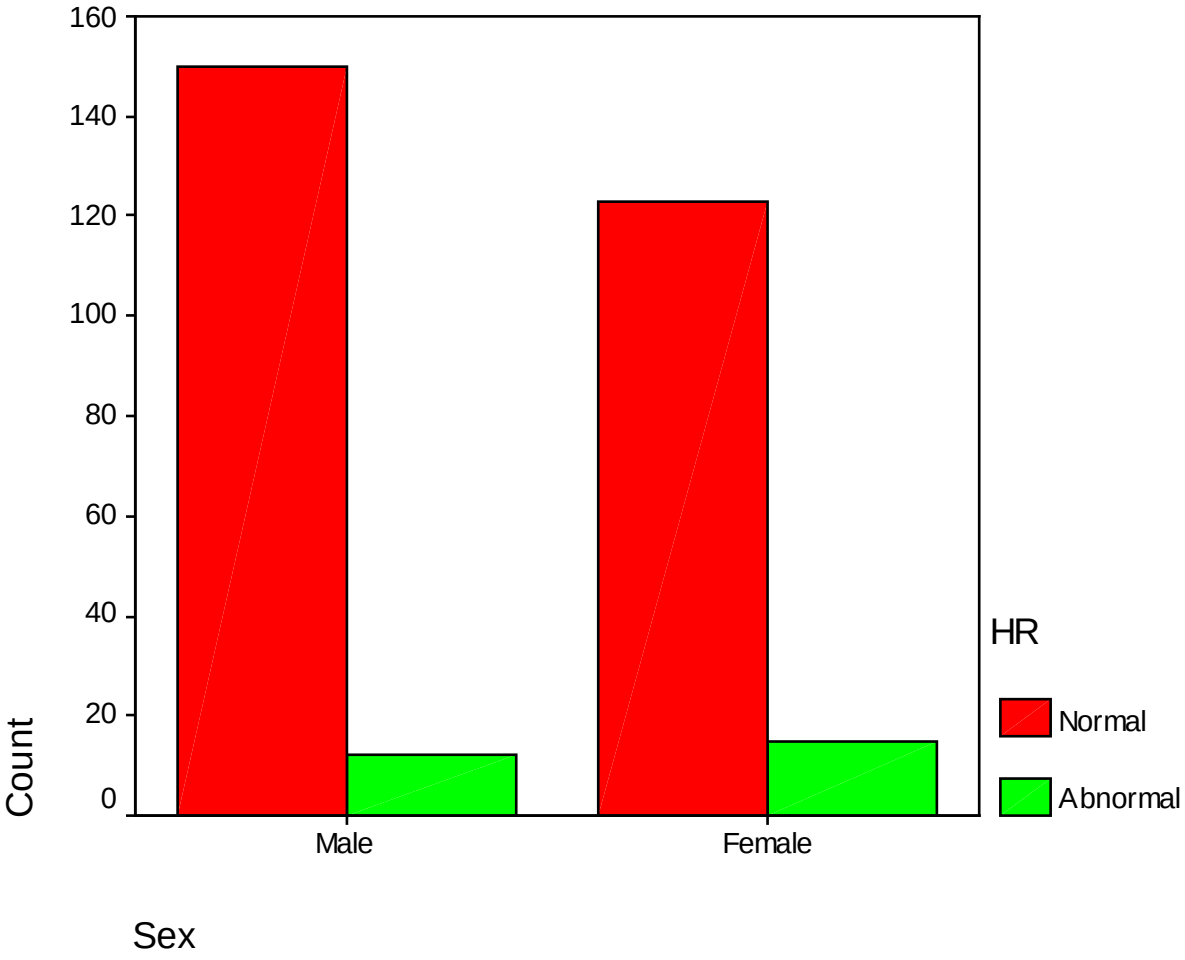

Figure: 19Graph showing Sex vs. Heart RateDistribution

The distribution of HeartRate abnormality is equal in both sexes statistical they are not significant **P value 0.0296**

8.2.8.4 Respiratory Rate

Table: 31 Respiratory Rate

			RR		Total
			Normal	Abnormal	
Sex	Male	Count	134	28	162
		% within Sex	82.7%	17.3%	100.0%
		% within RR	56.1%	45.9%	54.0%
	Female	Count	105	33	138
		% within Sex	76.1%	23.9%	100.0%
		% within RR	43.9%	54.1%	46.0%
Total		Count	239	61	300
		% within Sex	79.7%	20.3%	100.0%
		% within RR	100.0%	100.0%	100.0%

Table: 32 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.022(b)	1	.155		
Continuity Correction(a)	1.633	1	.201		
Likelihood Ratio	2.016	1	.156		
Fisher's Exact Test				.195	.101
Linear-by-Linear Association	2.015	1	.156		
N of Valid Cases	300				

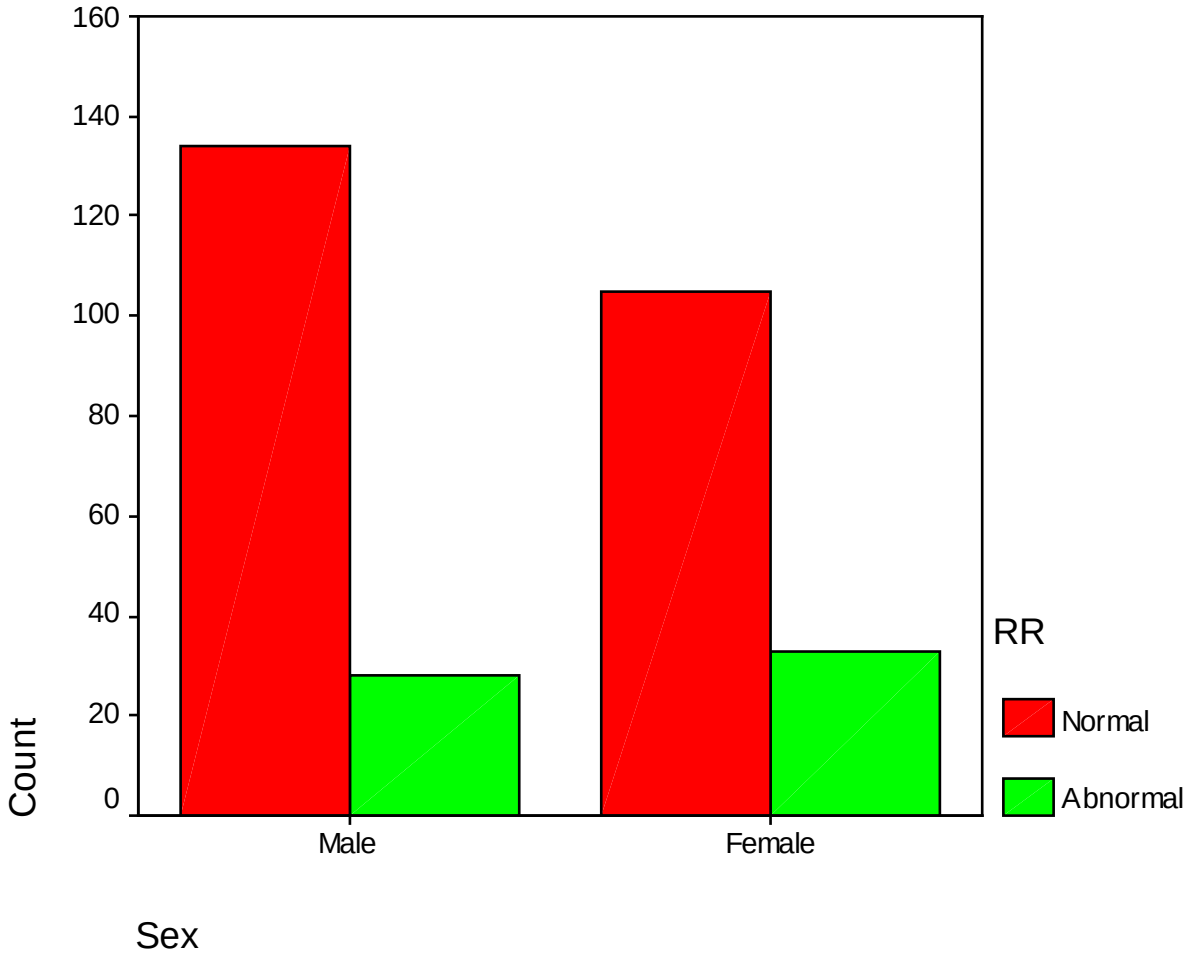

Figure: 20 Graph showingSex vs.Respiratory RateDistribution

The distribution of RespiratoryRateabnormality is equal in both sexes statistical they are not significant **P value 0.155**

8.2.8.5 Sensorium

Table: 32 Sensorium

			Sensorium		Total
			Normal	Abnormal	
Sex	Male	Count	136	26	162
		% within Sex	84.0%	16.0%	100.0%
		% within Sensorium	51.7%	70.3%	54.0%
	Female	Count	127	11	138
		% within Sex	92.0%	8.0%	100.0%
		% within Sensorium	48.3%	29.7%	46.0%
Total		Count	263	37	300
		% within Sex	87.7%	12.3%	100.0%
		% within Sensorium	100.0%	100.0%	100.0%

Table: 33 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.498(b)	1	.034		
Continuity Correction(a)	3.782	1	.052		
Likelihood Ratio	4.646	1	.031		
Fisher's Exact Test				.036	.025
Linear-by-Linear Association	4.483	1	.034		
N of Valid Cases	300				

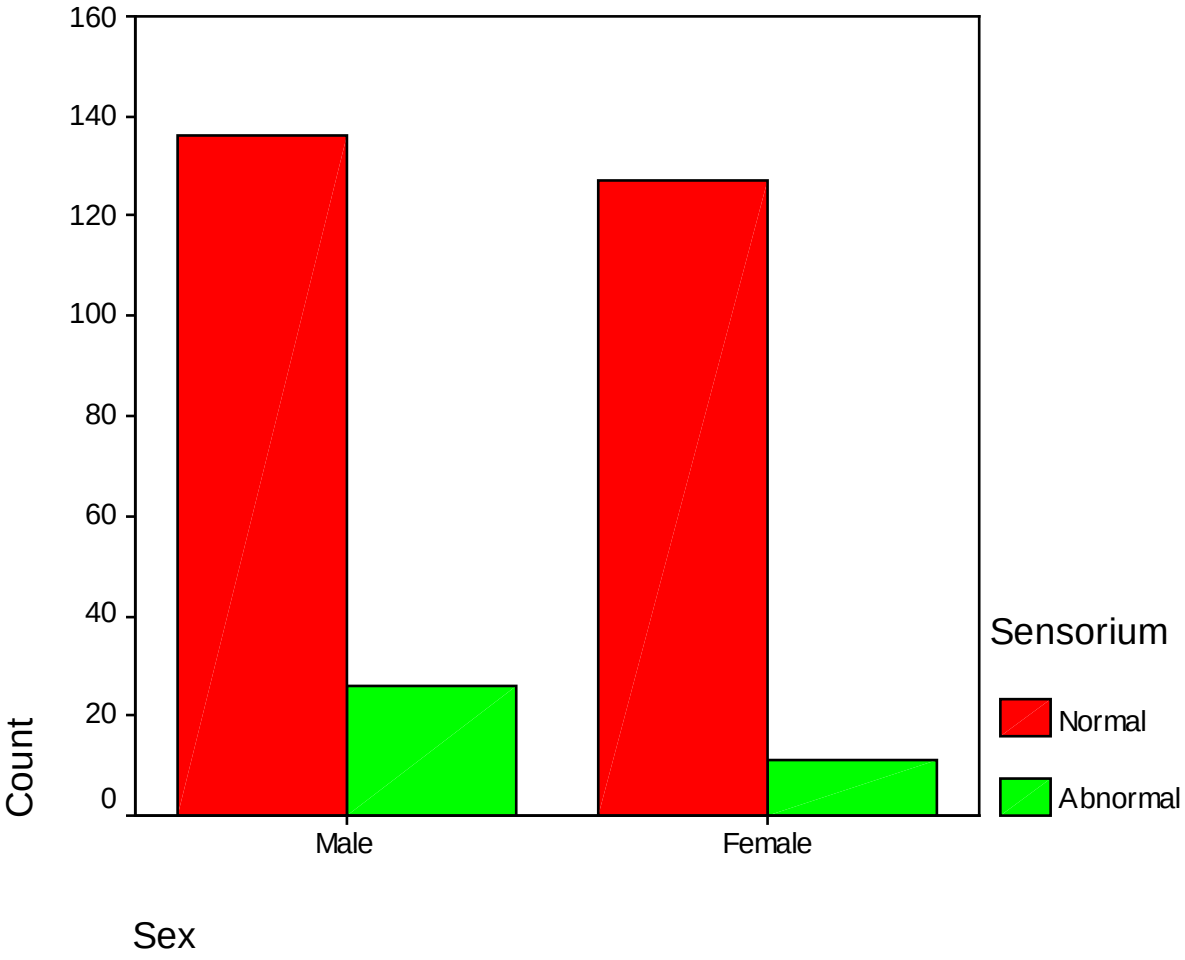

Figure: 21Showing Sex vs.SensoriumDistribution

The distribution of Sensoriumabnormality is equal in both sexes.statisticalthey are not significant **P value 0.034**

8.2.8.6 Seizures

Table: 34 Seizures

			Seizures		Total
			Normal	Abnormal	
Sex	Male	Count	147	15	162
		% within Sex	90.7%	9.3%	100.0%
		% within Seizures	53.8%	55.6%	54.0%
	Female	Count	126	12	138
		% within Sex	91.3%	8.7%	100.0%
		% within Seizures	46.2%	44.4%	46.0%
Total		Count	273	27	300
		% within Sex	91.0%	9.0%	100.0%
		% within Seizures	100.0%	100.0%	100.0%

Table: 35 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.029(b)	1	.865		
Continuity Correction(a)	.000	1	1.000		
Likelihood Ratio	.029	1	.865		
Fisher's Exact Test				1.000	.515
Linear-by-Linear Association	.029	1	.865		
N of Valid Cases	300				

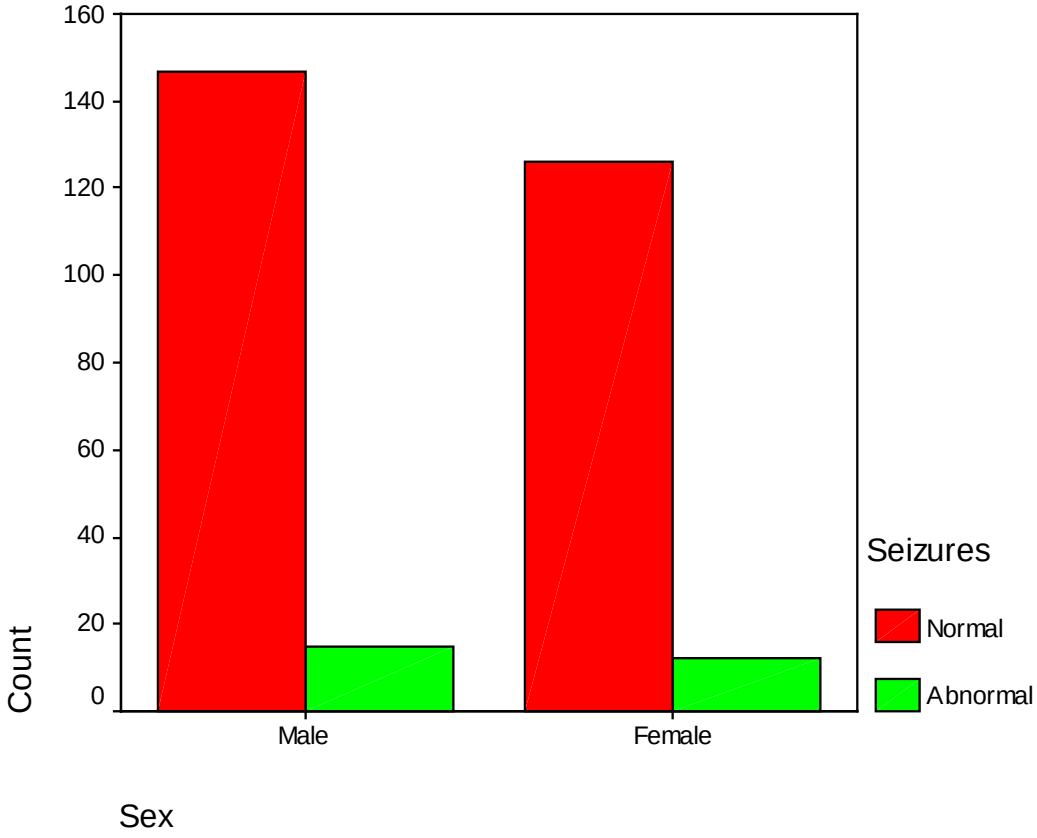

Figure: 22 Graph Showing Sex vs.SeizuresDistribution

The distribution of Seizures abnormality is equal in both sexes.Statistical they are not significant P value 0.0865

8.2.9 Sex vs. Outcome

Table: 36 Sex vs. Outcome

			Outcome		Total
			Discharge	Death	
Sex	Male	Count	150	12	162
		% within Sex	92.6%	7.4%	100.0%
		% within Outcome	54.7%	46.2%	54.0%
	Female	Count	124	14	138
		% within Sex	89.9%	10.1%	100.0%
		% within Outcome	45.3%	53.8%	46.0%
Total		Count	274	26	300
		% within Sex	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 37 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.706(b)	1	.401		
Continuity Correction(a)	.402	1	.526		
Likelihood Ratio	.703	1	.402		
Fisher's Exact Test				.418	.262
Linear-by-Linear Association	.703	1	.402		
N of Valid Cases	300				

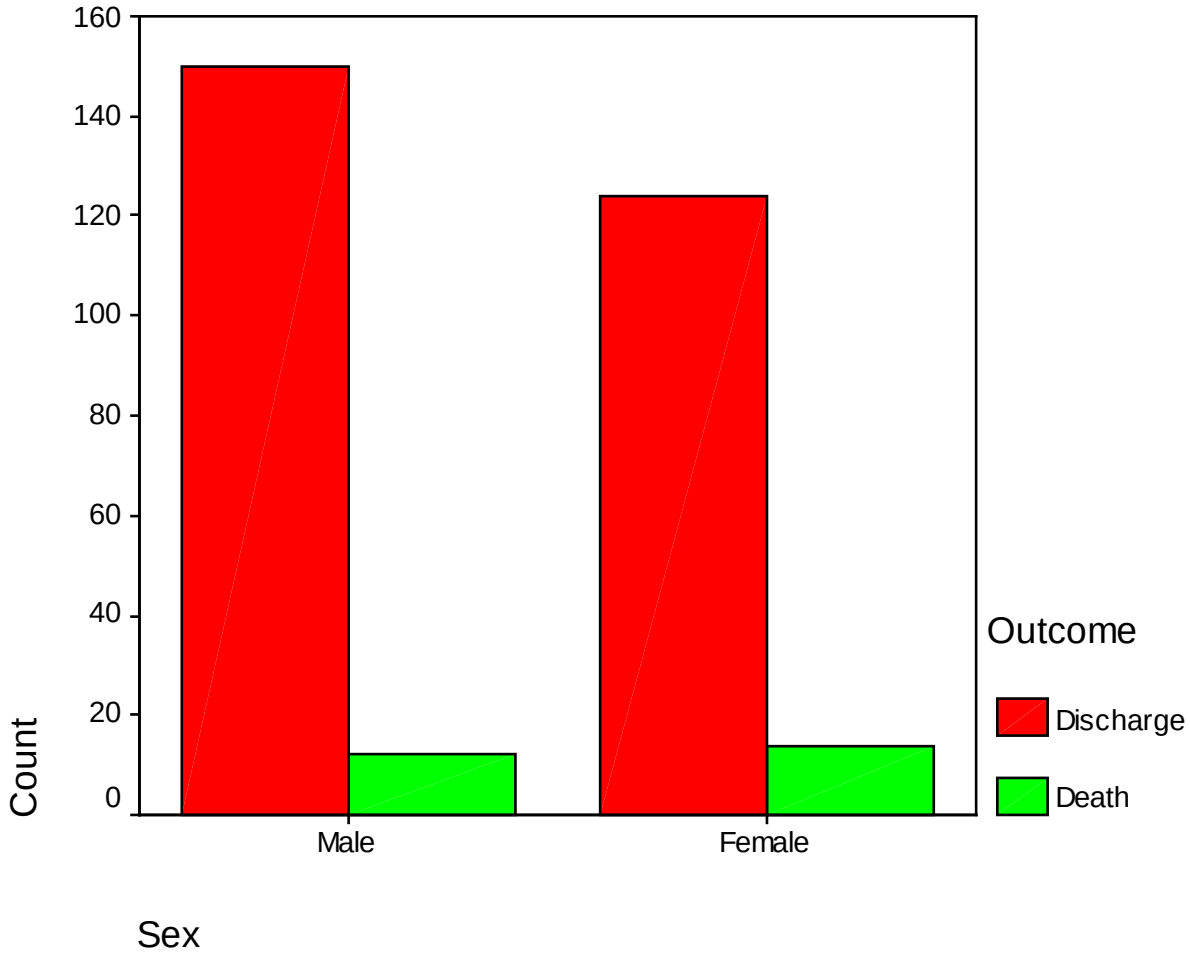

Figure: 23 Graph showingSex vs.OutcomeDistribution

Out of 300 children studied 162 were males and 138 were females.Mortality was equally distributed no sex predilection.

Sex has no statistical association with mortality.

8.3 overall TOPRS Score

TOPRS score was studied in relationship to distribution in study population, its relation to morality and its ability to predict morality using ROC.

8.3.1 Distribution of TOPRS score

TOPRS SCORE

The minimum score in the study is zero and maximum score is six.Clustering of cases seen at score zero and one.

Table: 38 TOPRS Score over all Frequency Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	163	54.3	54.3	54.3
	1	75	25.0	25.0	79.3
	2	37	12.3	12.3	91.7
	3	12	4.0	4.0	95.7
	4	7	2.3	2.3	98.0
	5	4	1.3	1.3	99.3
	6	2	.7	.7	100.0
	Total	300	100.0	100.0	

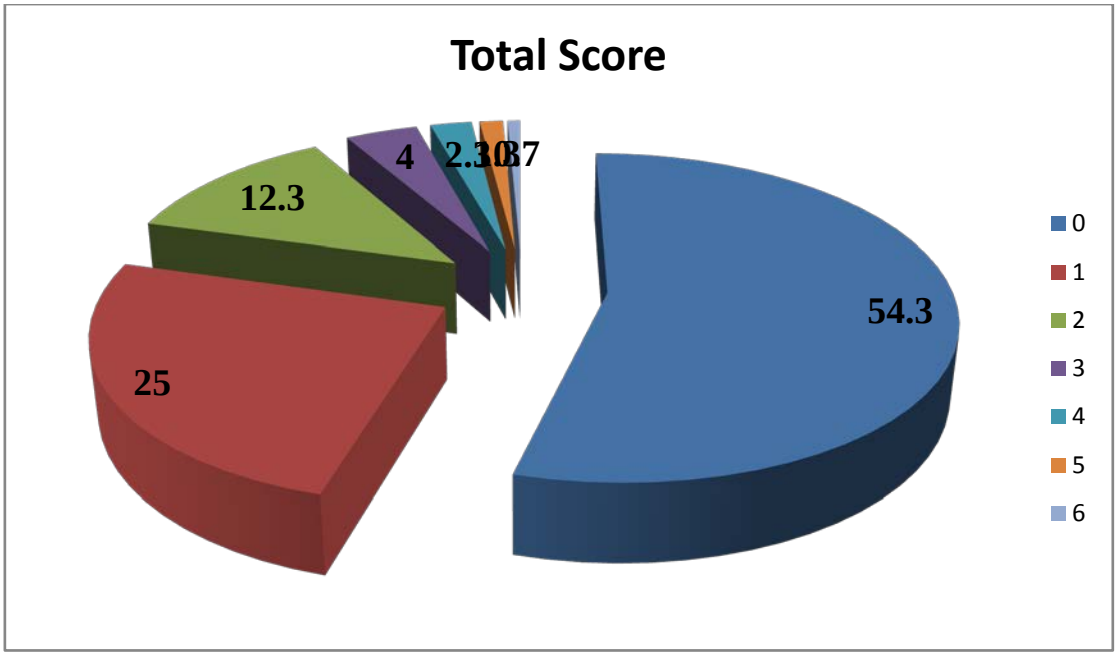

Figure: 24 Chart showing TOPRS Score over all Frequency Distribution

Table: 39 TOPRS Score over all Distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Discharge	274	91.3	91.3	91.3
	Death	26	8.7	8.7	100.0
	Total	300	100.0	100.0	

8.3.2 Over all TOPRS Score and Mortality

Out of 300 children 26 children died. The Mortality rate in the study is 8.6%

Mortality risk increases with increase in score.

There was no death in 0 score.

The Mortality 100% with score more than and equal to 4.

The relationship between TOPRS score & Mortality

Table: 40 Over all TOPRS Score and Mortality

Score	Total	Discharge		Death	
		No. of Cases	%	No. of Cases	%
0	163	163	100	0	0
1	75	74	98.6	1	1.33
2	37	33	89.18	4	10.81
3	12	4	33.34	8	66.67
4	7	0	0	7	100
5	4	0	0	4	100
6	2	0	0	2	100

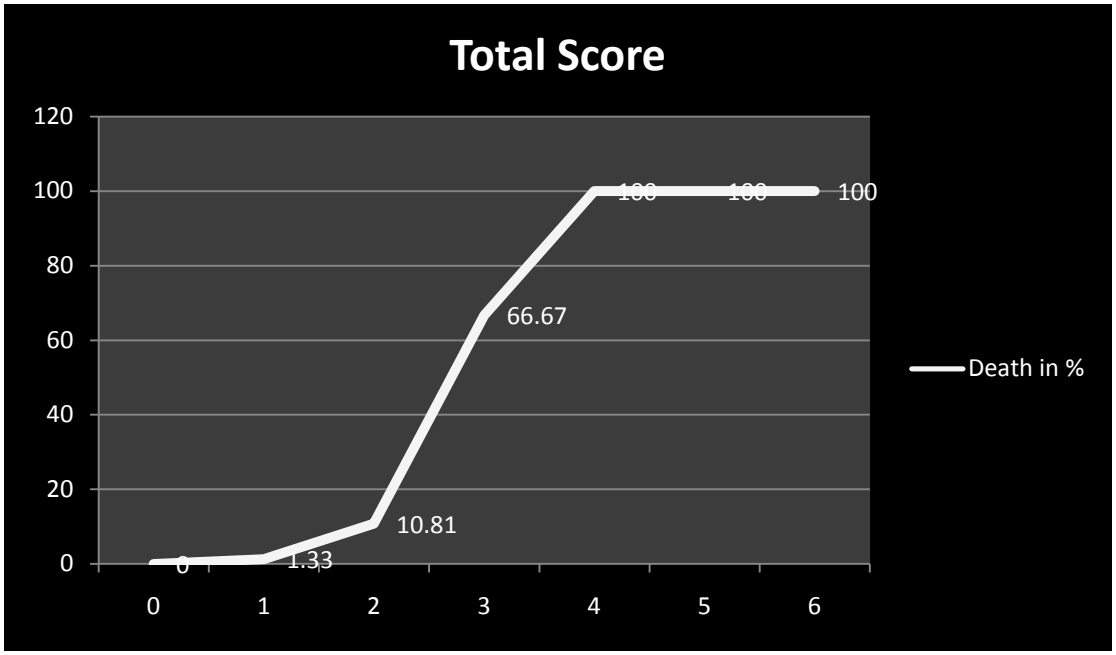

Figure: 25 Over all TOPRS Score and Mortality

Mortality increases with increases in the TORPS score which is depicted graphically.

X-axis - TOPRS Score

Y-axis - Mortality in %

8.3.3 The Range of Score and Mortality

Mortality rises with rise in number of abnormal variables. The score range is given below in the table. The linear trend of increase in mortality with increasing score was significant. Children more than three abnormal variables had 100 times higher mortality risk than children who had 3 or less abnormal variables.

Table: 41 Showing Range of score and Mortality %

Score	Discharge No. of cases	Death No. of cases	Mortality %
0-1	23	1	0.36
2-3	49	12	24
>3	13	13	100

8.3.4 Receiver Operative Curve (ROC)

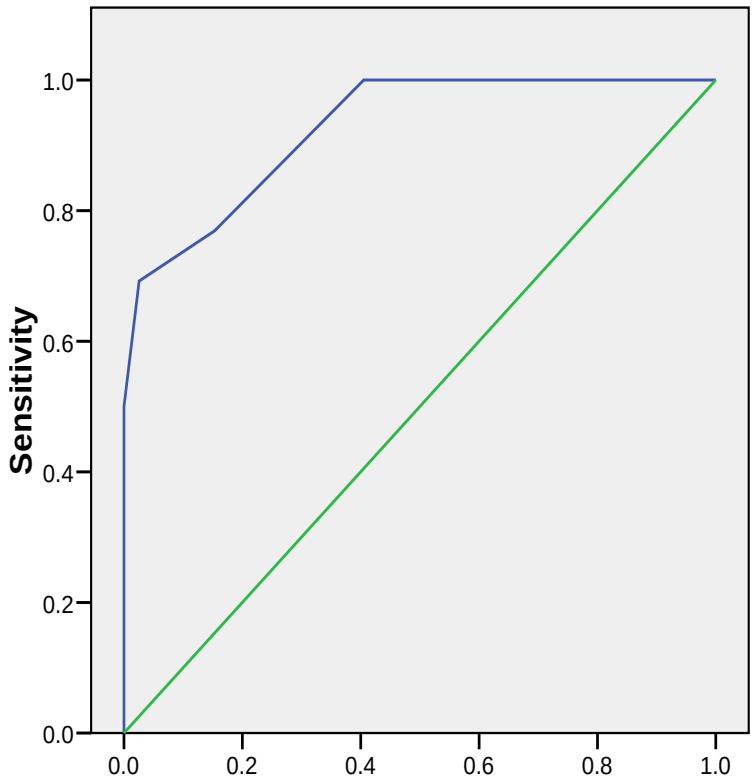

Figure: 26 ROC

Table: 42Area under the curve

Area	Std. Error [a]	Asymptotic Sig.	Asymptotic 95% Confidence interval	
			Lower Bound	Upper Bound
0.926	0.025	0.000	0.878	0.975

Table: 43Coordinates of the Curve

Positive if Greater than or Equal To[a]	Sensitivity	1-Specificity
-1.00	1.000	1.000
0.50	1.000	0.405
1.50	0.769	0.153
2.50	0.692	0.026
3.50	0.500	0.000
4.50	0.231	0.000
5.50	0.077	0.000
7.00	0.000	0.000

In our study, the area under ROC curve is **0.92**i.e the score based on regression could predict mortality in **92%** subjects correctly. Further score of **2** maximum discriminationwith sensitivity **87**and specificity **97**the TOPRS score is considered**EXCELLENT**at predicting mortality based on area under the curve.

8.4 Variables and their association with Mortality

Each variables of TOPRS scoring system was assessed with the outcome by chi-square test.The sensitive variables are further analysed by multiple logistic regression to assess magnitude of association with mortality.

8.4.1 Temperature and Outcome

Table: 44 Temperature and Outcome

			Outcome		Total
			Discharge	Death	
Temperature	Normal	Count	232	12	244
		% within Temperature	95.1%	4.9%	100.0%
		% within Outcome	84.7%	46.2%	81.3%
	Abnormal	Count	42	14	56
		% within Temperature	75.0%	25.0%	100.0%
		% within Outcome	15.3%	53.8%	18.7%
Total		Count	274	26	300
		% within Temperature	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 45 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	23.205(b)	1	.000		
Continuity Correction(a)	20.738	1	.000		
Likelihood Ratio	18.179	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	23.128	1	.000		
N of Valid Cases	300				

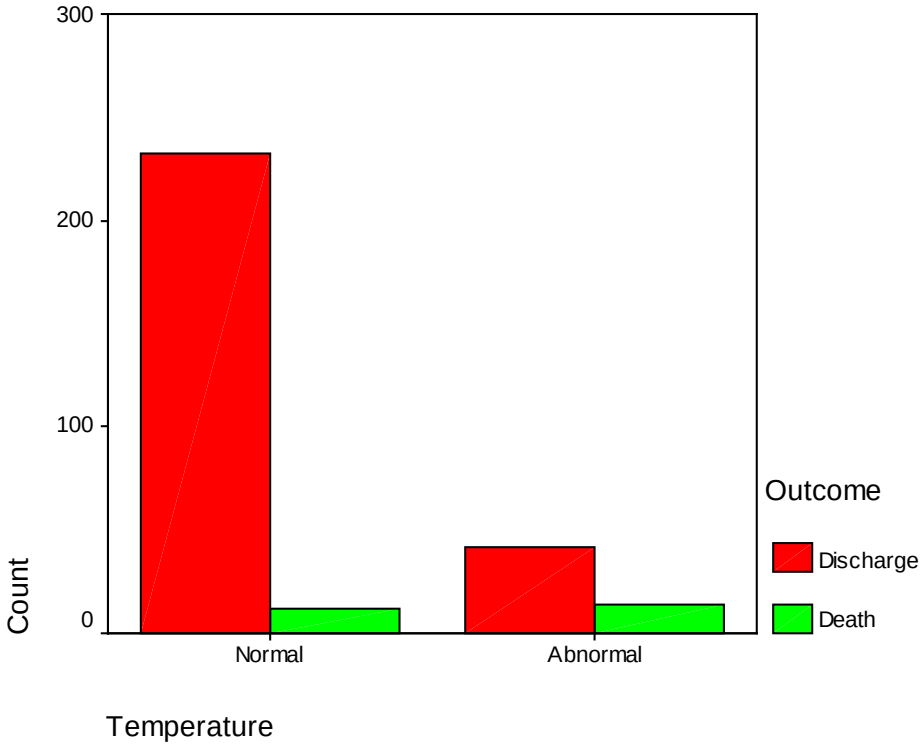

Figure 43 Graph showing Temperature and Outcome

Association of temperature with mortality is **NOT STATISTICALLY**significant.

8.4.2 SPO2 and Outcome

Table: 46 SPO2 and Outcome

			Outcome		Total
			Discharge	Death	
SPO2	Normal	Count	255	9	264
		% within SPO2	96.6%	3.4%	100.0%
		% within Outcome	93.1%	34.6%	88.0%
	Abnormal	Count	19	17	36
		% within SPO2	52.8%	47.2%	100.0%
		% within Outcome	6.9%	65.4%	12.0%
Total		Count	274	26	300
		% within SPO2	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 47 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	76.827(b)	1	.000		
Continuity Correction(a)	71.391	1	.000		
Likelihood Ratio	48.552	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	76.571	1	.000		
N of Valid Cases	300				

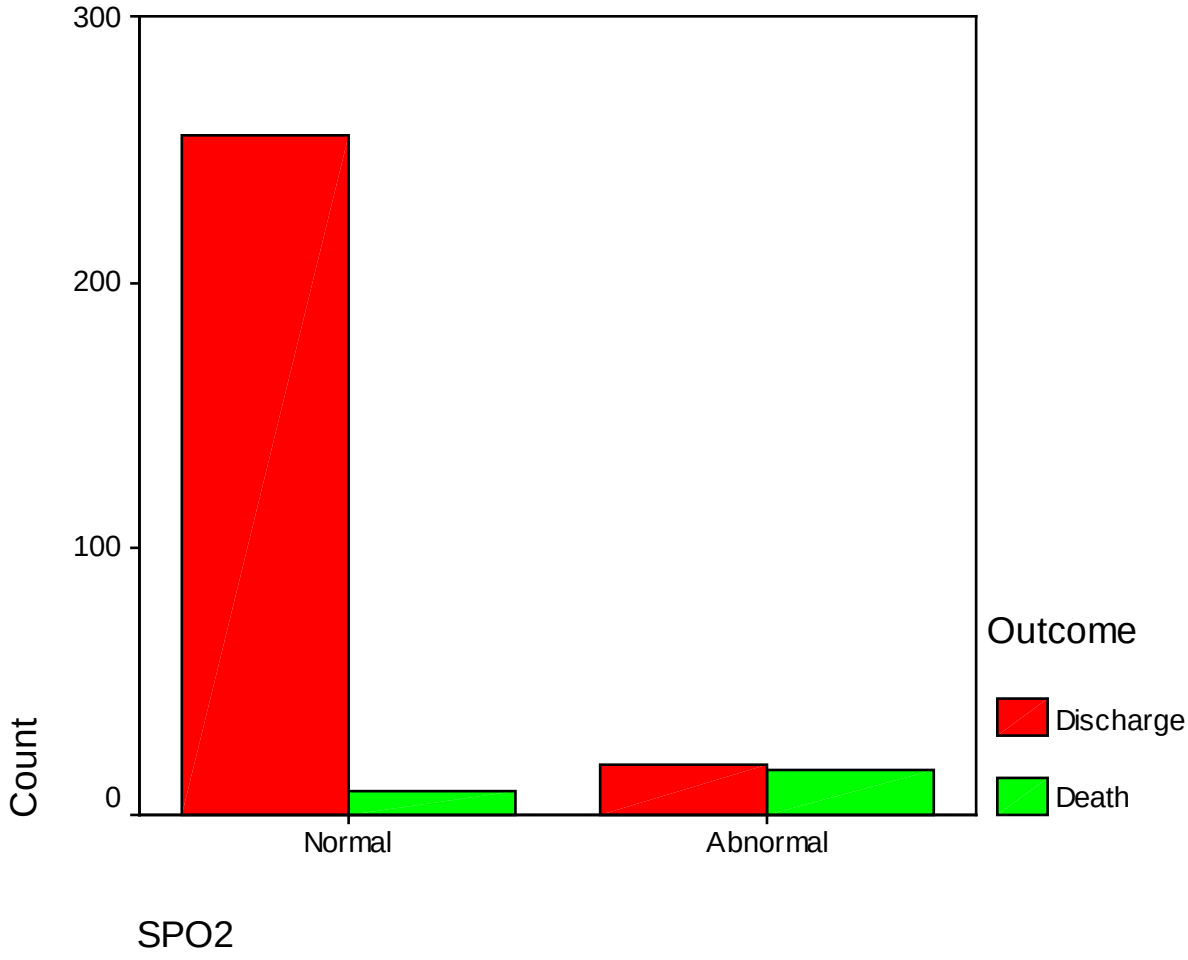

Figure 44 SPO2 and Outcome

Association of SPO2 with mortality is **STATISTICALLY**significant.

8.4.3 Heart Rateand Outcome

Table: 47Heart Rate and Outcome

			Outcome		Total
			Discharge	Death	
HR	Normal	Count	263	10	273
		% within HR	96.3%	3.7%	100.0%
		% within Outcome	96.0%	38.5%	91.0%
	Abnormal	Count	11	16	27
		% within HR	40.7%	59.3%	100.0%
		% within Outcome	4.0%	61.5%	9.0%
Total		Count	274	26	300
		% within HR	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 48 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	95.943(b)	1	.000		
Continuity Correction(a)	89.048	1	.000		
Likelihood Ratio	54.589	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	95.624	1	.000		
N of Valid Cases	300				

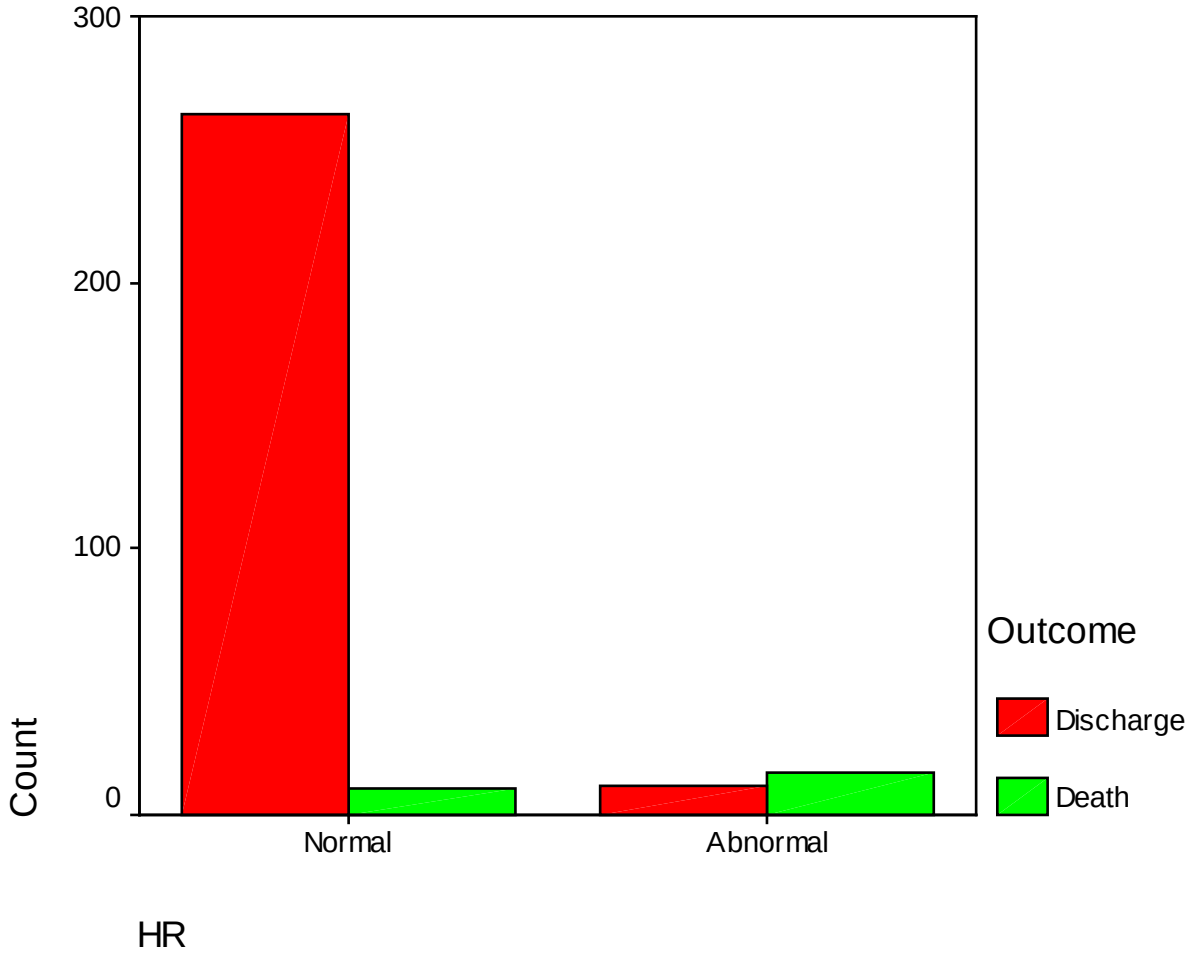

Figure 45 Graph showing Heart Rate and Outcome

Association of Heart Rate with mortality is

STATISTICALLYsignificant.

8.4.4 Respiratory Rateand Outcome

Table: 48 Respiratory Rate and Outcome

			Outcome		Total
			Discharge	Death	
RR	Normal	Count	232	7	239
		% within RR	97.1%	2.9%	100.0%
		% within Outcome	84.7%	26.9%	79.7%
	Abnormal	Count	42	19	61
		% within RR	68.9%	31.1%	100.0%
		% within Outcome	15.3%	73.1%	20.3%
Total		Count	274	26	300
		% within RR	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 49 Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	48.888(b)	1	.000		
Continuity Correction(a)	45.388	1	.000		
Likelihood Ratio	37.960	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	48.725	1	.000		
N of Valid Cases	300				

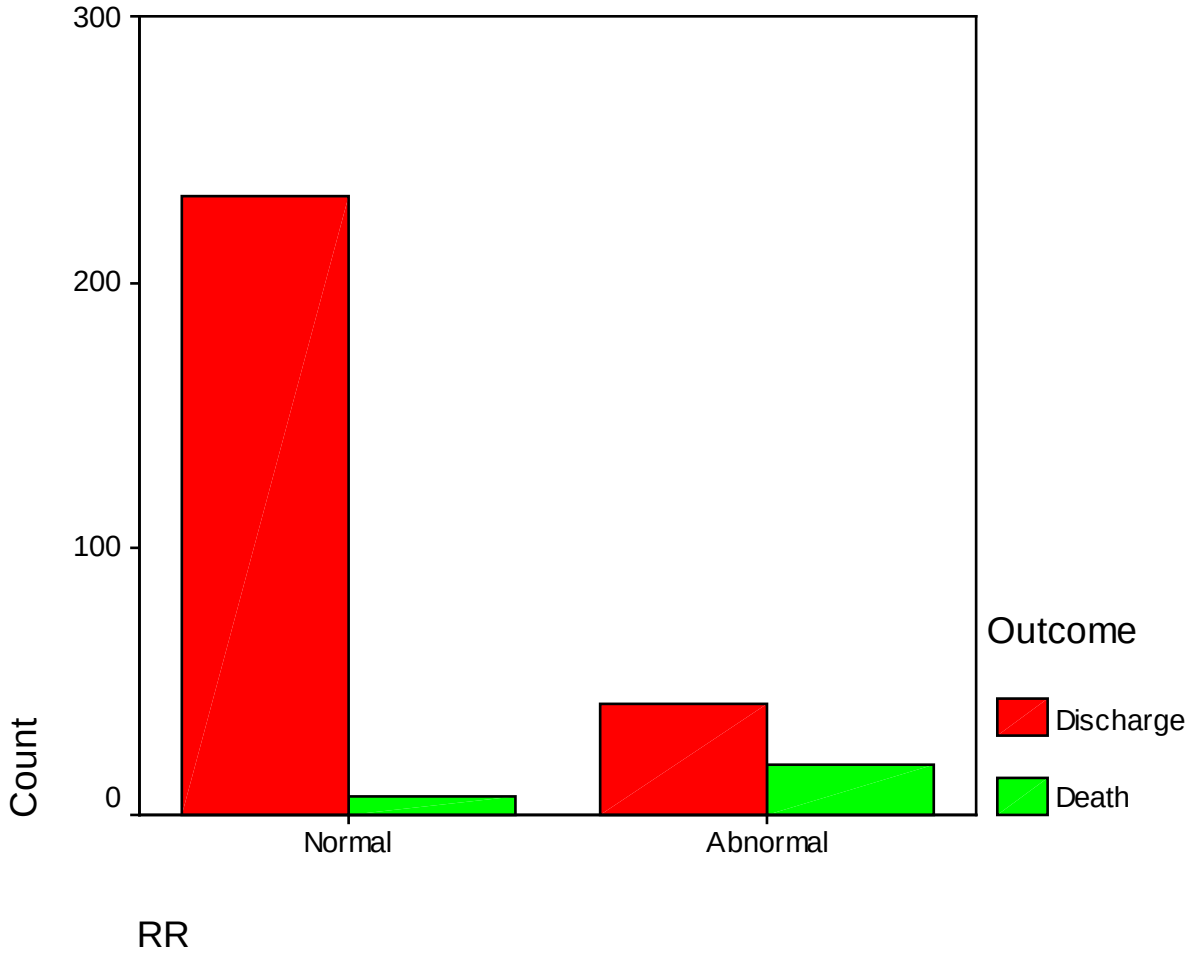

Figure 46 Graph showing Respiratory Rate and Outcome

Association of RespiratoryRate with mortality is **STATISTICALLY**significant.

8.4.5 Sensorium and Outcome

Table: 50 Sensorium and Outcome

			Outcome		Total
			Discharge	Death	
Sensorium	Normal	Count	253	10	263
		% within Sensorium	96.2%	3.8%	100.0%
		% within Outcome	92.3%	38.5%	87.7%
	Abnormal	Count	21	16	37
		% within Sensorium	56.8%	43.2%	100.0%
		% within Outcome	7.7%	61.5%	12.3%
Total		Count	274	26	300
		% within Sensorium	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 51Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	63.746(b)	1	.000		
Continuity Correction(a)	58.860	1	.000		
Likelihood Ratio	41.233	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	63.533	1	.000		
N of Valid Cases	300				

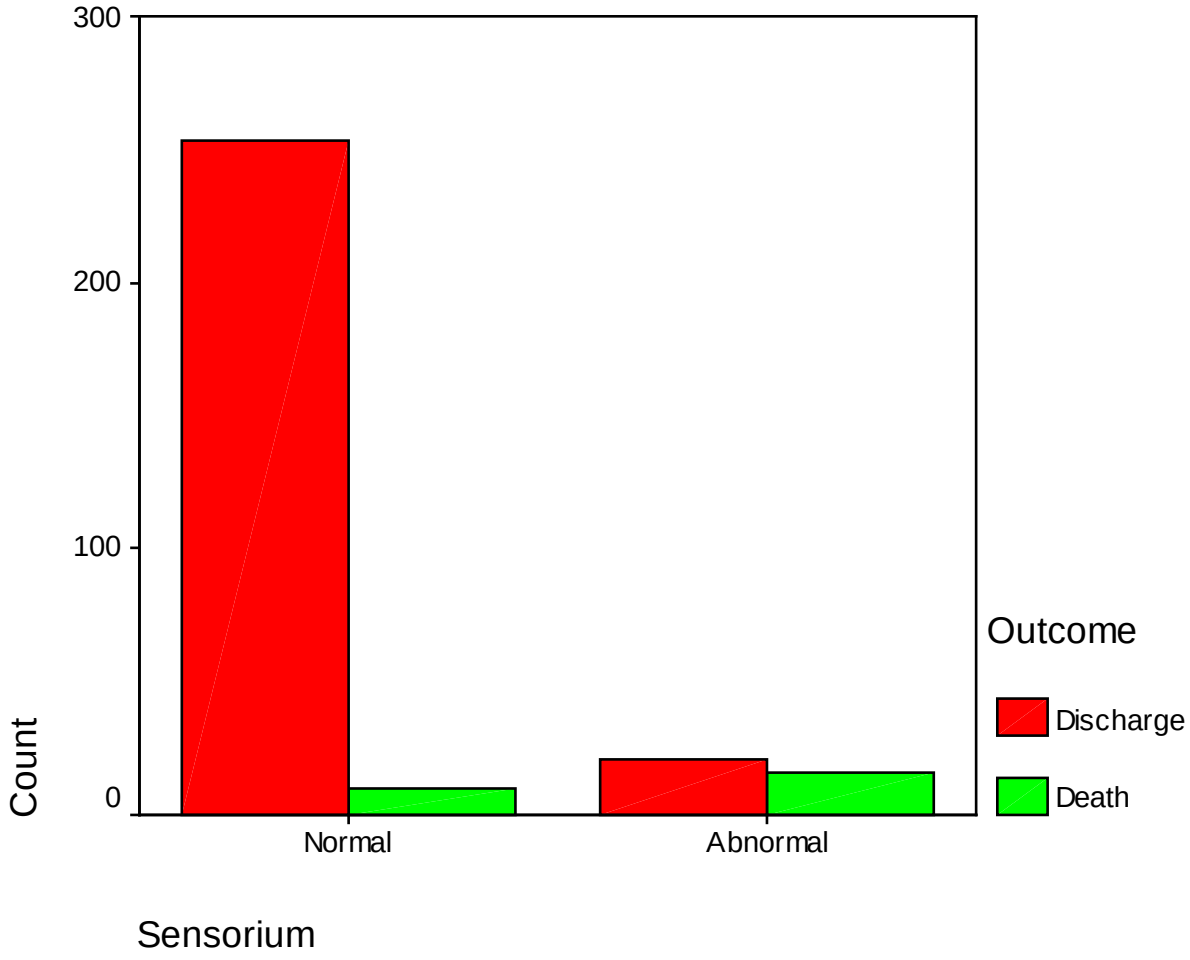

Figure 46 Graph showing Sensorium and Outcome

Association of Sensoriumwith mortality is **STATISTICALLY**significant.

8.4.6Seizures and Outcome

Table: 52Seizures and Outcome

			Outcome		Total
			Discharge	Death	
Seizures	Normal	Count	252	21	273
		% within Seizures	92.3%	7.7%	100.0%
		% within Outcome	92.0%	80.8%	91.0%
	Abnormal	Count	22	5	27
		% within Seizures	81.5%	18.5%	100.0%
		% within Outcome	8.0%	19.2%	9.0%
Total		Count	274	26	300
		% within Seizures	91.3%	8.7%	100.0%
		% within Outcome	100.0%	100.0%	100.0%

Table: 53Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.638(b)	1	.056		
Continuity Correction(a)	2.399	1	.121		
Likelihood Ratio	2.910	1	.088		
Fisher's Exact Test				.070	.070
Linear-by-Linear Association	3.626	1	.057		
N of Valid Cases	300				

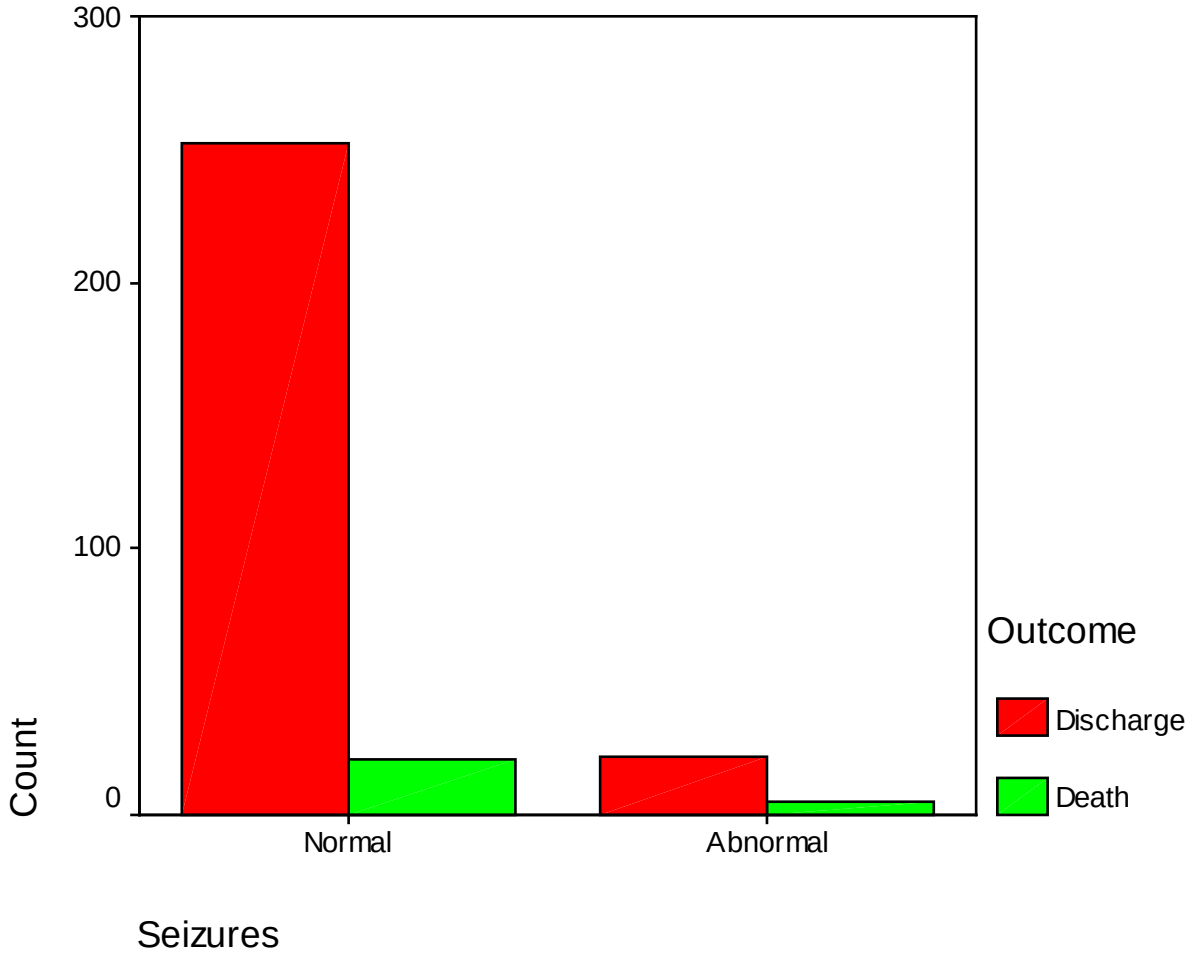

Figure 47 Graph showing Seizures and Outcome

Association of seizureswith mortality is not **STATISTICALLY**significant.

From the above univariateanalysis**heart rate, respiratory rate,SPO2**and **sensorium**has strong association with mortality.Their magnitude of association was further analysed by Logistic Regression.

Logistic Regression Analysis

Table: 54 Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
								Lower	Upper
Step 1(a)	TEMP	.683	.695	.965	1	.326	1.980	.507	7.733
	SPO2	1.904	.684	7.739	1	.005	6.713	1.755	25.675
	HR	2.814	.738	14.522	1	.000	16.675	3.922	70.890
	RR	1.858	.741	6.294	1	.012	6.412	1.502	27.385
	SENSORIUM	1.840	.723	6.466	1	.011	6.295	1.525	25.990
	SEIZURES	1.832	1.013	3.269	1	.071	6.245	.857	45.499
	Constant	-5.322	.729	53.316	1	.000	.005		

From the above table it’s clearly understood that abnormality of four variables

Oxygen Saturation, Heart Rate, Respiratory Rate, Sensorium has strong correlation with mortality.

SPO2 and Heart Rate **Highlysignificant** at 1%

Respiratory Rate and Sensorium **significant** at 5%

DISCUSSION

Triage plays a very important role in the Emergency department. It helps to make sure that the sick children are treated according to degree of severity of their disease severity and so that appropriate treatment is given at the right time. A simple clinical scoring system is essential for this purpose,to predict the right outcome. It should be as simple as possible to use so that it can be applied at first contact with patient. To make it less cumbersome PRISM scoring was evolved with fourteen variables. It used both physiological and a laboratory variable so was not useful for triage, as it is done within 24 hours of admission but not at the time of admission.

Similarly physiological index of mortality (PIM)[16,17]was developed which was also depended on physiological and laboratory variables. Hence these systems can't be used in ED for the initial triage because laboratory investigations are time consuming.

The performance of TOPRS score in our study was **EXCELLENT**in prediction of mortality with ROC analysis having an area under the curve **0.92 (92% prediction of mortality)** with **P value < 0.001**.**

In similar TOPRS study done in Ludhiana the area under ROC 81.7%.Further in our study score showed maximum discrimination with sensitivity of 87% and specificity of 97%.

Mortality also increases with decreasing age. Further analysis of individual variables with logistic regression showed pulse rate, respiratory rate, spo2 and sensorium were significantly associated with mortality.

TOPRS score of 3 was significantly associated with mortality. In the previous study done in Institute of child health, Chennai in the year 2006 to validate the usefulness of PRISM III score in predicting mortality in PICU involving same age group, the area under ROC was 0.853 (85%) correct prediction of mortality.

The TOPRS score has performed better than PRISM score in predicting mortality in this population with area under ROC being 0.92.

Further as already mentioned it assesses the physiological instability of the patient on arrival and paves way for early intervention.

The assessment of TOPRS score in the population will provide

- Objective measure of severity of illness on admission.
- Mortality prediction
- Early triage of sick children
- Resource allocation
- Early intervention which help in reducing mortality

CONCLUSION

From the above results and discussion the following conclusions are arrived

- TOPRS is simple clinically developed scoring system based on vital signs alone which will be useful in predicting the severity of illness and mortality at admission itself in ED.
- TOPRS score provides an objective assessment of severity of illness
- Score perform extremely well in predicting mortality in a tertiary care centre.
- TOPRS score being a clinical scoring system which does not require any expertise can be applied at all levels of health care to prioritise and identify critically ill patient who would benefit from prompt referral to a higher centre especially in regions of resource poor environment

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DEPARTMENT OF PAEDIATRICS TIRUNELVELI MEDICAL COLLEGE

Name: Age: Sex: M/F

Provisional Diagnosis at the time of Admission

	Normal	Abnormal
Temperature	0	1
Oxygen Saturation	0	1
Heart rate	0	1
Respiratory Rate	0	1
Sensorium	0	1
Seizures	0	1
Total Score		

Outcome: Discharge / Death

SIRS CRITERIA

	Variables	**Abnormal Range**		
1	Temperature	>38^{0}C <36^{0}C		
2	Heart Rate	<1 Year	>180	<100
		2 - 5 Y	>140	<90
		6 - 12Y	>130	
3	Respiratory Rate	<1 Year	>60	Or Requiring respiratory support
		2 - 5 Y	>50	
		6 - 12Y	>18	
4	SPO_2	90 %		
5	Sensorium			
	A - Alert V - Verbal P - Pain responsive U - Unresponsive	Any one expect alert		
6	Seizure	Present at the time of admission		

S.NO	Age in years	Age in years	Sex	Temperature	SPO2	HR	RR	Sensorium	Seizures	Total Score	Outcome
1	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
2	11	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
3	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
4	0.3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
5	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
6	2	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
7	0.6	<= 3	Female	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Discharge
8	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
9	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
10	3	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
11	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
12	4	> 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
13	0.6	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
14	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
15	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
16	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
17	12	> 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
18	12	> 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
19	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
20	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
21	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
22	12	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
23	0.2	<= 3	Female	Normal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
24	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
25	0.5	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Death
26	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
27	8	> 3	Male	Normal	Abnormal	Normal	Normal	Abnormal	Abnormal	3	Discharge
28	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
29	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
30	3	<= 3	Female	Normal	Normal	Normal	Normal	Abnormal	Abnormal	2	Discharge
31	0.5	<= 3	Female	Normal	Normal	Abnormal	Abnormal	Normal	Normal	1	Death

32	7	> 3	Male	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Discharge
33	2	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
34	0.6	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Abnormal	2	Discharge
35	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
36	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	1	Discharge
37	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	1	Discharge
38	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
39	9	> 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
40	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
41	0.1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
42	1	<= 3	Female	Normal	Normal	Abnormal	Abnormal	Normal	Normal	2	Discharge
43	0.1	<= 3	Male	Abnormal	Normal	Abnormal	Abnormal	Abnormal	Normal	4	Death
44	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
45	9	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
46	3	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
47	0.9	<= 3	Female	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
48	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
49	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
50	7	> 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
51	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
52	0.3	<= 3	Female	Abnormal	Abnormal	Normal	Abnormal	Normal	Normal	3	Discharge
53	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
54	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
55	3	<= 3	Female	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
56	0.6	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
57	1	<= 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
58	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
59	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
60	9	> 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
61	0.1	<= 3	Female	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Discharge
62	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
63	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
64	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge

65	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
66	2	<= 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
67	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
68	6	> 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
69	5	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
70	0.5	<= 3	Male	Abnormal	Normal	Abnormal	Abnormal	Abnormal	Normal	3	Death
71	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
72	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
73	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
74	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
75	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
76	0.2	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
77	0.2	<= 3	Male	Normal	Abnormal	Abnormal	Abnormal	Normal	Normal	3	Discharge
78	7	> 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
79	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
80	9	> 3	Female	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
81	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
82	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
83	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
84	2	<= 3	Male	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Discharge
85	2	<= 3	Female	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Discharge
86	9	> 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
87	2	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
88	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
89	0.3	<= 3	Female	Normal	Abnormal	Abnormal	Abnormal	Normal	Normal	3	Death
90	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
91	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
92	10	> 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
93	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
94	9	> 3	Male	Normal	Normal	Normal	Abnormal	Abnormal	Normal	2	Discharge
95	0.2	<= 3	Male	Normal	Abnormal	Abnormal	Normal	Abnormal	Normal	3	Death
96	8	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
97	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge

98	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
99	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
100	3	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Abnormal	2	Death
101	0.2	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
102	4	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
103	0.2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
104	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
105	0.6	<= 3	Female	Normal	Abnormal	Abnormal	Abnormal	Normal	Normal	3	Death
106	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
107	0.3	<= 3	Female	Abnormal	Abnormal	Normal	Abnormal	Abnormal	Normal	4	Death
108	8	> 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
109	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
110	7	> 3	Female	Abnormal	Abnormal	Normal	Normal	Abnormal	Abnormal	4	Death
111	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
112	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
113	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
114	1	<= 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
115	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
116	2	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
117	0.2	<= 3	Male	Abnormal	Normal	Normal	Normal	Abnormal	Abnormal	3	Discharge
118	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
119	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
120	0.2	<= 3	Female	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	5	Death
121	1	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
122	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
123	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
124	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
125	0.2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
126	0.2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
127	0.2	<= 3	Male	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Discharge
128	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
129	5	> 3	Male	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
130	3	<= 3	Female	Normal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	4	Death

131	0.3	<= 3	Female	Abnormal	Normal	Abnormal	Normal	Normal	Normal	2	Discharge
132	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
133	7	> 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
134	9	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
135	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
136	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
137	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
138	0.2	<= 3	Female	Normal	Abnormal	Normal	Normal	Normal	Normal	1	Discharge
139	0.8	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
140	8	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
141	0.4	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
142	0.2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
143	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
144	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
145	0.6	<= 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
146	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
147	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
148	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
149	5	> 3	Female	Abnormal	Normal	Normal	Normal	Abnormal	Abnormal	3	Discharge
150	3	<= 3	Male	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	6	Death
151	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
152	11	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
153	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
154	0.4	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
155	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
156	2	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
157	0.5	<= 3	Female	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Discharge
158	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
159	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
160	3	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
161	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
162	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
163	0.2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge

164	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
165	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
166	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
167	12	> 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
168	12	> 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
169	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
170	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
171	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
172	12	> 3	Male	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
173	0.2	<= 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
174	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
175	0.6	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Death
176	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
177	8	> 3	Male	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
178	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
179	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
180	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
181	0.6	<= 3	Female	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Death
182	7	> 3	Male	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Discharge
183	2	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
184	0.8	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Abnormal	2	Discharge
185	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
186	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
187	1	<= 3	Female	Normal	Normal	Normal	Abnormal	Abnormal	Normal	2	Discharge
188	2	<= 3	Male	Normal	Normal	Normal	Abnormal	Abnormal	Normal	2	Discharge
189	9	> 3	Female	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
190	7	> 3	Male	Normal	Normal	Normal	Abnormal	Abnormal	Normal	2	Discharge
191	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
192	1	<= 3	Female	Normal	Normal	Abnormal	Abnormal	Normal	Normal	2	Discharge
193	2	<= 3	Male	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	5	Death
194	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
195	9	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
196	3	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge

197	0.8	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
198	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
199	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
200	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
201	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
202	0.3	<= 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
203	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
204	12	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
205	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
206	0.5	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
207	1	<= 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
208	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
209	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
210	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
211	0.1	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
212	4	> 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
213	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
214	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
215	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
216	2	<= 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
217	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
218	6	> 3	Female	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
219	5	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Death
220	0.5	<= 3	Male	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	3	Discharge
221	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
222	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
223	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
224	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
225	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
226	0.2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
227	0.2	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
228	7	> 3	Female	Normal	Normal	Abnormal	Abnormal	Normal	Normal	2	Discharge
229	1	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge

230	9	> 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
231	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
232	1	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
233	10	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
234	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
235	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
236	9	> 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
237	2	<= 3	Female	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
238	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
239	0.3	<= 3	Female	Abnormal	Abnormal	Abnormal	Abnormal	Normal	Normal	4	Death
240	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
241	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
242	10	> 3	Female	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge
243	1	<= 3	Male	Normal	Normal	Abnormal	Normal	Normal	Normal	1	Discharge
244	9	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
245	0.2	<= 3	Male	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	5	Death
246	8	> 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
247	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
248	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
249	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Death
250	3	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
251	0.3	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
252	4	> 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
253	0.3	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
254	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
255	0.7	<= 3	Female	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Death
256	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
257	0.3	<= 3	Female	Abnormal	Abnormal	Normal	Abnormal	Abnormal	Normal	4	Death
258	8	> 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
259	9	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
260	7	> 3	Female	Abnormal	Abnormal	Normal	Normal	Abnormal	Normal	3	Death
261	10	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
262	5	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge

263	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
264	1	<= 3	Male	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
265	6	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
266	2	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Abnormal	2	Discharge
267	0.2	<= 3	Male	Normal	Normal	Normal	Normal	Abnormal	Normal	1	Discharge
268	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
269	4	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
270	0.5	<= 3	Female	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	5	Death
271	1	<= 3	Male	Normal	Normal	Normal	Abnormal	Normal	Normal	1	Discharge
272	7	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
273	1	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
274	7	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
275	2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
276	0.2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
277	0.2	<= 3	Male	Normal	Abnormal	Normal	Abnormal	Normal	Normal	2	Discharge
278	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
279	5	> 3	Male	Abnormal	Normal	Normal	Abnormal	Normal	Normal	2	Discharge
280	3	<= 3	Female	Normal	Abnormal	Abnormal	Abnormal	Abnormal	Normal	4	Death
281	0.3	<= 3	Female	Abnormal	Normal	Normal	Normal	Normal	Normal	1	Discharge
282	12	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
283	7	> 3	Female	Abnormal	Abnormal	Normal	Abnormal	Normal	Normal	3	Discharge
284	9	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
285	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
286	11	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
287	4	> 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
288	0.2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
289	0.6	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
290	8	> 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
291	0.4	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
292	0.2	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
293	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Abnormal	1	Discharge
294	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
295	0.6	<= 3	Male	Abnormal	Abnormal	Normal	Normal	Normal	Normal	2	Discharge

296	3	<= 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
297	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
298	2	<= 3	Male	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
299	5	> 3	Female	Normal	Normal	Normal	Normal	Normal	Normal	0	Discharge
300	3	<= 3	Male	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	Abnormal	6	Death